THE TRANSFORMATION OF THE OIL MARKET. A STUDY OF FINANCIALISATION THROUGH CRISES

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TABLE OF CONTENTS

TABLE OF FIGURES[1]

[1] This thesis follows a sequential numbering system for the figures, where the number of the figure is displayed followed by the number of the chapter it belongs to.

TABLE OF TABLES[2]

[2] This thesis follows a sequential numbering system for the tables, where the number of the table is displayed followed by the number of the chapter it belongs to.

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DECLARATION

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ABSTRACT

The aim of this thesis is to explain the dynamics behind the increased level of price volatility and speculation in the oil market over the past three decades. In contrast to mainstream accounts, which typically invoke the notion of global oil shortage and so-called 'peak oil' arguments, this thesis suggests that price volatility and speculation in the oil market originate from a decades-long process of financialisation punctuated by recurring oil price shocks.

This thesis examines the evolution of the international oil market with a view to investigate how, and to what effect, the process of financialisation has transformed the structure and dynamics of the global oil market between 1980 and 2010. In tracing this phenomenon to the contemporary oil market, and specifically to the context of the oil shocks, I identify three periods of financialisation: low (1980–1990), early (1991–2001), and advanced (2002–2008).

My research suggests that the process of financialisation is both cause and proof of a profound change in the structure of the global oil market, insofar as the addition of financial actors has turned the triangle of producers, consumers, and mediators that characterised the oil market until the 1980s into a four-tier structure. Propelled by breakthroughs in technology and finance, this fourth player is found responsible not only for transforming the relationship between the oil industry and the financial sector, but also for reconfiguring the political economy of the international oil market.

INTRODUCTION

The aim of this thesis is to inquire whether and to what effect, the set of processes commonly understood as financialisation has affected the political economy of the international oil market. The hypothesis I set out to investigate is twofold. I first consider whether the increased price volatility and market speculation of the past three decades can be accounted for by reference to the wider forces of financialisation. Secondly, I put forward that the topography of the international oil market as we know it today was shaped to a large extent, by a critical series of events and processes set in motion in the 1980s.

This approach takes issue with conventional accounts of the oil industry. While the latter often cite the first oil shock and the rise of the OPEC as evidence that the foundations of the modern oil market structure were laid in the 1970s, my hypothesis proceeds from the recognition that, prior to the 1980s, the oil market was not as accustomed to increases in price levels and market uncertainties, and was altogether alien to such factors as market expectations and speculations. This thesis examines the emergence of these comparatively new features of the oil industry and seeks to trace their effects on the oil market. My findings suggest that instances of speculation, price changes, and herd behaviour among market participants result from the process of financialisation that has transformed the structure of the international oil trade since the late 1980s (Mabro, 2005).

The past three decades have witnessed a significant inflation of the general price level of oil as well as increased levels of price volatility (Fong and See, 2002; Duffie, Gray,

and Hoang, 2004; Sadorsky, 2006; Lee and Zyren, 2007; Regnier, 2007; Agnolucci, 2009; Kang et al., 2009; Trolle and Schwartz, 2009; Labban, 2010). As shown in Figures 16 and 17, which plot, respectively, the price of Nymex light crude oil and the monthly spot price volatility, the increase in the average price level of oil has increased from around $30 per barrel to more than $100 per barrel over the past three decades and its volatility rate has risen just as dramatically.

Traditional approaches to global oil have tended to interpret these developments as the results of fundamental or political factors, such as the scarce and finite supply of world oil reserves or political conflicts in major oil regions (Campbell, 2003; Simmons, 2005; Verleger, 2008; Lipsky, 2009a; McCormick, 2008). This thesis attempts to step beyond these conventional explanations by drawing attention to the process of financialisation as the *explanans* of the oil price hikes and increased market volatility of the past three decades. This period, traditionally described as the era of finance-driven globalisation or financialisation, has witnessed dramatic changes in the dynamics and operations of the oil market. Specifically, financial investments in both the physical and futures oil market have given rise to new forms of market participation. These new actors – mostly financial institutions – have had a profound impact on the fundamental structure of the oil market.

These developments mark a historical shift in a market that was traditionally considered a paragon of stability and long-term returns (Tang and Xiong, 2009; EIA, 2012; Labban, 2010). Traditionally, the price level of oil was dictated by the interaction of demand, supply, and mediator forces, and was thus influenced only by war, natural disasters, embargoes, or politically driven adjustments. As external shocks of this kind were only few and far between, oil prices kept relatively stable. This was the case, for example, before the 1973 oil shock, as well as in the mid-1970s and in the 1986–1990 and 1991–1999 periods. Today, by contrast, expectations of a disturbance in the oil market are enough to influence the futures market and, in turn, to trigger a spiral effect which feeds back into the physical market and thereby affects the price level without any actual change in the underlying fundamental values (Labban, 2010). It is also worth

noting, at this point, that these developments are not unique to the oil sphere, and have been observed in other commodity markets.

The effects of these developments are far-reaching. Table 3, for example, shows an increasing positive correlation, throughout the last decade, between the price level of crude oil and other major commodities, such as natural gas, gold, silver, soybeans, corn, and wheat (EIA, 2012). Similar patterns can be observed between the crude oil futures returns and the financial investments in US dollars, the S&P 500, and US government bonds ('T' bills) – only the negative correlation with the performance of the stock markets after 2008 breaks this pattern (EIA, 2012). These new characteristics of the oil market have attracted a wide variety of investors who have exploited new regulatory and technological opportunities to gradually penetrate the market and inject vast amounts of liquidity. As the volume of capital exchanged in the oil futures market has now eclipsed that of the physical market on which it is based (see Figure 5), this thesis will focus on these specific financial dynamics.

To date, the concept of financialisation has been mainly employed in the discussions about financial markets and in the debates about the increasing power and presence of new financial motives, actors, products, and institutions in everyday life (Epstein, 2005). Numerous definitions of the phenomenon of financialisation have been proposed over the years. Reflecting its interdisciplinary nature, the contributions to this debate come from a wide variety of academic quarters. Even so, research in the financialisation of commodity markets began only recently and has so far concentrated primarily on the food market, as well as gold and oil. Research on this latter front, however, remains scarce and fragmented.

This thesis aims to contribute to this emergent body of scholarship. It will survey academic approaches to the process of financialisation and then develop a framework to account for its effects on the structure of a 'non-financial' commodity market. Empirically, it presents fresh analysis on the historical evolution of the international oil industry since the 1980s in an attempt to illustrate the influence and effects that the process of financialisation has exerted on the structure of the oil market. An important

implication of this perspective on the financialisation of commodity markets is that the new configuration of the oil market, shaped as it is by new financial players, technologies, and motives, may have played a major role in the genesis of the 2007–9 international economic crisis.

This research perspective will call for careful empirical analysis of the evolution of a market that has supplied the primary energy source of all modern economies since the start of the 20th century – a trend that according to all major international energy forecasting institutions[3] is set to continue into the medium-term future. As a global economic and political resource, oil is central for the well-being and prosperity of individual states and has always boasted pole position on the political-economic agenda of the major powers. Political attention, however, has escalated in tandem with functional complexity. Since the late 1980s, in particular, the oil market has grown more elaborate and multi-layered in terms of both real commodity production and financial operations. In production, contrary to common belief, oil is not purely divided between crude and refined products. As a commodity, oil comes in different qualities, and different variations thereof, based on American Petroleum Institute (API) rating, toxicity levels, and sulphur content; equally varied in quality and grade are the distillate products that result from its processing and refining, such as gasoline, diesel, gas oil, fuel oil, heating oil, naphtha, jet fuel, bitumen, and petroleum coke. This variety is a crucial explanatory factor to understand why the economic and political forces within the structure of the oil market lack a universal approach across the board of all oil products. While the equilibrium of demand and supply of crude oil, for example, is highly inelastic, demand alone is sometimes less so, as it depends on the internal composition of the actors, as well as their resources, agreements, and potential.

A number of benchmarks are used for determining the price level of international crude oils. Among the most widely known are the Light Louisiana Crude (LLS), the Brent, and the West Texas Intermediate (WTI), which mainly differ in location of trade, quality, and calculation method. The choice of price benchmarks varied over time. This

[3] IEA, EIA, OPEC, BP, ExxonMobil.

thesis focuses on the dominant benchmark in the market between 1980 and 2010, the WTI, which refers to a light, sweet crude oil traded in Crushing, Oklahoma, and marketed in the Chicago Mercantile Exchange. Although the Brent has recently surpassed the WTI as the benchmark of choice in the oil market, its dominance may be short-lived as production levels in the North Sea, where Brent crude oil is extracted, are now dropping. In fact, this usually portends the rise of an alternative benchmark in the oil market.

The use of benchmarks as universal references is essential for pricing crude oils produced internationally. The differential between the price of the benchmark and the price of other crude oils is normally calculated based on a combination of different factors, such as chemical properties, refinery yield, quality, acidity, supply-and-demand conditions, producer's commercial strategy, transportation links and costs, as well as geopolitical aspects (Horsnell and Mabro, 1993; Bacon and Tordo, 2005).

Focusing on a single benchmark allows this study to investigate the rise of a new variable in the structure of the oil market of the past three decades, known as paper markets. This refers to markets of WTI and Brent crude oil futures and options traded in the US and the UK, respectively. Even though new markets in refined oil products have appeared in the past few years, mainly in the form of gasoline and diesel futures contracts, they are not yet as popular as their crude oil counterparts.

Against this background, the two major research questions of this thesis can be put as follows:

- In what ways has financialisation transformed the structure and dynamics of the oil market between 1980 and 2010?

- What do the structural changes in the oil market suggest about the process of financialisation in the context of the contemporary commodity market?

To address these questions, this thesis overviews the recent financial history of the oil industry in order to investigate the growing contextual and structural impact of financial institutions on the political economy of this particular commodity market. In doing so, my research identifies three phases of financialisation, low (1980–1990), early (1991–2001), and advanced (2002–2008), punctuated by three distinct episodes of oil shocks. Methodologically, the agenda of this study sits at the intersection of political economy, economics, financial and economic geography, sociology, and behavioural economics. The argument unfolds in the following steps:

- Since the late 1970s/early 1980s, a new group of actors has emerged within the structure of the oil market, which has gradually established a performative cycle between the physical and financial realms of the oil market.

- This group of actors is financial in nature, and can be broken down into two distinct categories:

    - Traditional financial investors, including hedging and long-term value investments; and

    - Speculators, including price manipulators and other groups driven by speculative interests.

- Financialisation, in this thesis, is understood as the process whereby financial motives, actors, markets, products, and institutions develop in non-financial markets. In analysing the effects of this process I employ a two-pillar approach, where the behavioural and fundamental performance planes of the market interact in a cyclical pattern. My analysis suggests that this interaction is subject to variations in the technological and regulatory status of the market as well as in its political-economic environment.

This argument is developed in two parts. Part 1 frames the historical foundations and evolution of the oil market throughout the three decades under study. After a critical

review of the main conceptual approaches to financialisation, it goes on to formulate an alternative framework for understanding the nature of this complex phenomenon and its effects on markets of non-financial commodities, such as oil. Part 2 presents an empirical study of the three oil shocks that took place during the period under consideration. Through the magnifying glass of the oil shocks, these chapters examine the role of critical events in the evolution of the structure and dynamics of the oil market and conclude that these have been profoundly altered by the process of financialisation. More specifically, the emergence of new financial actors, markets, motives, structures, and institutions has altered the behaviour of all the other major players in the oil market, as the latter becomes increasingly vulnerable to inflated price levels, intensified price volatility, speculative opportunities, and the vagaries of the international financial markets.

Hence, Part 1 critically engages with traditional 'peak oil' accounts of increased price volatility. My analysis suggests that oil production, though likely to reach a peak at some point in the future, has as yet never done so. This refutes the idea that the increase in price volatility and speculative dynamics in the oil market can be attributed to some peak in the oil production levels. As shown in this thesis, however, they can successfully be associated with the broad process of financialisation that picked up steam in the late 1980s. Conceptually, this thesis identifies two different currents in the academic debate on financialisation. The first strand can be characterized as 'macroeconomic-focused literature', insofar as it conceptualises financialisation as a historical and structural transformation process, whereas the second current of scholarship is more institutional in focus and contemporary in scope. While each of the two theoretical approaches offers insightful analysis of the broader structural dynamics that underpin the complex process of financialisation as well as its effects on the socio-political and economic realms, they fail to provide a platform through which the forces of financialisation can be traced within the very structure of a given market, especially one dependent on physical production, as in the case of commodities.

Drawing on a synthesis of the two sets of academic scholarship on financialisation, as well as on insights from behavioural economics and other social sciences, I build a two-

pillar analytical framework to identify the effects of the financialisation process by reference to both behavioural practices and macroeconomic data. This is not an attempt to advance a novel theoretical approach to the study of political economy; it is, rather, an analytical road map to the constitutive processes, functions, and developments that sustained the expansion of the financialisation of the oil market.

Within this particular framework, the study of financialisation puts special emphasis on the role played by human psychology (Shiller, 2005), modes of regulation (Aglietta, 1979), and fundamental macroeconomic indicators in shaping and magnifying the effects of volatile price levels, speculations, and, ultimately, financial crises. Importantly, financial crises, within the scope of this approach, are always understood to constitute economic crises as well. In this sense, my two-pillar approach frames crises in financialised commodity markets as outcomes of behavioural trends and actors' expectations on the one hand and macroeconomic fundamentals on the other. For the purposes of this thesis, both sets of factors are examined against the background of the types of regulations and technologies that have shaped the market since the 1980s. This twofold approach allows, for example, to study such factors as the effects of the evolution of the oil market on the macroeconomic performance of importing countries. At the same time, it traces these factors to the direct and indirect links between the oil market and the financial sector. Although the development of the oil-based financial sector is analysed as a physically different market to that of oil itself, the increasingly volatile determination of the price of oil is identified as the result of a performative cycle between these two different markets.

In Part 2, this approach is tested against a selection of three of the most significant financial crises in recent history. Here, crises are employed as methodological tools to better isolate the effects of the financialisation of the oil market. This is because, at these times, the reactions and performance of single market actors are likely to stand out against the norms of the period and abnormalities become easier to spot. The resulting body of empirical evidence, which also includes the period of the 2008 oil shock and the credit crisis, comprises not only the main data and events, but also the motives and

dynamics that informed the behaviour of key oil-market actors during financial and macroeconomic crises.

Among these actors, the US economy, in particular, is chosen as the primary object of study. This is because the US rates as the developed economy most directly affected by the oil market by virtue of its status as leading centre of international finance, foremost importer of oil, and exclusive issuer of the international oil currency. Despite the fact that, on the one hand, the introduction of horizontal shale-oil drilling technologies have set the US on a path to become a net exporter by the next decade and that, on the other hand, China is projected to become the world's largest oil importer and consumer by 2020, the position of the US in the international oil market between 1980 and 2010, as contemplated throughout this study, is undisputed.

Of all the downward and upward price shocks that have occurred during the thirty-year period here considered (Blanchard and Gali, 2008), this thesis only focuses on those that parallel economic or financial crises in oil-importing economies. These are the oil shock of 1991, coinciding with the invasion of Kuwait, the shock at the turn of the millennium, fuelled by speculation, peak-oil fears, and tensions in the Middle East, and, thirdly, the recent economic and financial crisis of 2008. The study of these three oil shocks, and their subsequent repercussion on the US financial and economic crises, makes it possible to chart the emergence and expansion of the process of financialisation in the context of the oil market. The significance of this process is then discussed by reference to its impact on the international structure of the political economy of oil. Based on data from the OECD countries, this study reveals a dramatic and steady increase in the geographical reach and macroeconomic effects of the oil shocks throughout the three decades under study.

Part 3 offers a synthesis and a discussion of the historical and theoretical conclusions presented in Part 1 and Part 2. In doing so, it traces the key historical aspects of the financialisation of the oil market to the behavioural and macroeconomic models identified in my two-pillar approach with a view to explain the effects of the financialisation of the oil market on international financial and macroeconomic crises.

From this study, this thesis draws three conclusions. First, the financialisation of the oil market can be adequately explained with a two-pillar framework that looks, on the one hand, at the economic fundamentals behind the effects of the real oil market on oil-based paper markets and, on the other, at the elements of behaviour and expectations that determine the effects of the paper markets on the real oil market. Second, the oil market has undergone an evolutionary process since the 1980s, which involved the increasingly active participation of a class of financial actors that transformed the structure of the market and, along with it, the mechanism of oil prices. Third, the oil market has experienced an increase in the geographical reach of its pricing effects, especially in the post-2000 period. These conclusions point to how the international financialisation of commodity markets can account for the increasingly important role that oil has played over the past thirty years in the political economy of financial and macroeconomic crises – such as the one we are currently undergoing.

Methodology

The thesis is based on a number of types and sources of data. Identifying and selecting data sources for a research investigation of the oil market, its major players, their activities and crucially, interests, is a challenge considering some sensitive areas opened by my research (i.e., the notion and role of financial speculation), and the interests of the parties who release this information. This thesis examines data focusing on the performance of the oil market, which in turn, can be categorized under two major subcategories. The first one is that of data relating to the physical market of oil, while the second is that of data relating to the oil based financial market.

When studying the physical aspect of the oil market and specifically, the relevant figures, more closely, one limitation regarding the accuracy of the available sources becomes clear. I have undertaken a close comparative study of data provided by the four major international oil market forecasting institutions [Energy Information Agency

(EIA), a public US body; the International Energy Association (IEA), which is very closely linked to the OECD (Organization for Economic Co-operation and Development); OPEC (Organisation for the Petroleum Exporting countries, a body for the oil producing countries; and BP (British Petroleum, one of the largest oil companies]. My examination revealed that there are significant discrepancies between the data provided by these bodies. Trying to dig deeper, I established that these discrepancies are due to two principal factors. First, the bodies which are used as the sources of these institutions are not always accurate, as the information gathering and publishing agencies of many developing countries do not provide us with accurate data on their demand, consumption, supply and price levels. As a result, in these cases, the four major reporting institutions simply have to make educated guesses. Second, the nature of the discrepancies in the data also indicated that the inherent interests of each of the four institutions are reflected in the data that they publish.

The second challenge associated with the physical aspect of the oil market, is that as oil is very important for the economies of many of the producing countries, they are reluctant to publish complete and accurate information with regards to their production capabilities. The uncertainty allows them room to maneuver in influencing the price level by adjusting their production levels accordingly, therefore this type of data and information are often deemed to be of critical national interest. This issue is discussed more extensively in the section of the thesis focusing in detail on the problem of spare capacity. Finally, a similar uncertainty also exists from the demand side, as many of the consuming countries are building oil reserves, and their reported level of demand does not always correspond to the level of consumption. Therefore, one has to examine the data in depth in order to find their exact consumption levels.

In other words, the available information on the physical aspect of the oil market is not always accurate. At the same time, the discrepancies between the major forecasting institutions are not that big, especially when studying the past, present or near future, to have an impact on the general framework and trajectory of this study. In this thesis, data from both the EIA and the IEA is widely referenced as these the institutions represent,

and can be considered as the most accurate sources available for the western oil importing economies.

Moving on to the oil based financial market, again data availability and accuracy is of central importance. As is mentioned repeatedly throughout this thesis, data, including reliable quantitative data, is only available for the registered part of this market, as trades that occur bilaterally between traders or institutions are not registered in any way. The data available and used for the purposes of this thesis, derive from the Commodities Futures Trading Commission (CFTC) of the US (its accuracy has been criticized as they rely on the punctuality of each trader to register correct information on each trade that he/she performs). The CFTC is in the process of introducing new methods for data collection, as well as new types of data, however these are still not available and when they do come in line, they will only be available from that date onwards. Therefore, the data available for studying the period of 1980 to 2008 are restricted.

This thesis also uses data from pricing and reporting institutions such as Platts, Bloomberg and Reuters. These companies are comparatively autonomous from political interests. Private corporations, they are in the business of providing data for the market, by relying heavily the market actors in the process of retrieving these same data, they manage to provide us with the most accurate and widely accepted information on the performance of the oil based financial product markets, as well as its physical spot pricing. While using the data supplied by these companies this thesis is not able to utilize the full scale of the resources these corporations provide, as access to their data is subscription restricted.

The History of the Oil Market until the 1970s

Compared to other markets, the characteristics of the oil market are especially complex. As a non-renewable resource, oil is not only naturally scarce, but also immediately

obsolete after use. Therefore, the general expectation is that, at some point in the future, it will deplete. Herein lies the special complexity of this market: it is as yet impossible to know exactly how much oil is still available. Even though much of the land has been explored (Maugeri, 2009: 9), the same cannot be said for undersea fields. Moreover, oil-producing countries have not –and cannot – provide reliable statistics on the amount of oil that is potentially available in their territory, not just on political grounds but also because *'reserves are not a "limited stock created once and for all"; they are "inventories, constantly used up and replaced" estimates of "total production" from a reservoir over time'* (Labban, 2010). This leaves any estimate of the international availability of oil open to question (Maugeri, 2009: 9).

Be that as it may, global dependency on oil as primary energy source is sufficient proof of the central role that the oil market plays in the contemporary modern world. From the production of plastic to that of the fuel that powers cars, airplanes and ships, oil has become an integral part of everyday life. Thanks to its relative abundance, ease of access, and low costs, the ubiquity of oil, especially in the West, is now taken for granted. As a result, demand for energy has become infinitely inelastic with the advance of technology: as long as it remains the most widely used and preferred energy source, oil will retain monopoly control of this sector.

This monopoly is easily explained by the fact that there has never been, to date, a source of energy as stable or efficient as oil, nor has technological research and development managed to find alternatives that can effectively outperform its advantages. It is worth noting, however, that the reasons behind this status quo run deeper, and are partly political-economic in nature. Indeed, the study of technology and oil reveals an interesting pattern, whereby research and technological breakthroughs in alternative energy sources mostly occur during periods of high oil prices (Adelman , 2004: 6). In other words, people and governments seek ways to replace oil only when its price becomes too high for them to sustain. Monopoly control of the energy sector is therefore highly contingent upon prices of oil remaining at a level that deters technological advances in alternative energy sources (Adelman, 2004: 6).

The history of this successful commodity market, in its current form, dates back to 1862, when Rockefeller made the first investment in oil (Tanzer, 1974: 24). This resulted in the creation of Standard Oil, which had complete monopoly in transporting and marketing oil. This monopoly persisted up until 1901 when the Spindletop field in Texas, the largest oil reserve in the American continent, was discovered. Andrew Mellon, a banker and industrialist, raised the capital to form the Gulf Oil Corporation, the first company to exploit this new reserve. A number of other corporations followed suit. Among them, the Texas Corporation (Texaco) and the Shell Transport and Trading Company of London were the largest.

A number of oil discoveries around the world, especially in Russia and India, created new competition in the world markets for Standard Oil; at the same time, the merger between the Royal Dutch and the Shell Transport and Trade Company gave birth to the Shell group. However, the biggest hit came with the US antitrust legislation in 1911. The Standard Oil monopoly was broken and the company was divided, paving the way for the first oil cartel, later named 'Seven Sisters' (Szulc, 1974: 60). The Seven Sisters consisted of BP, also known as Anglo-Persian Oil Company, Gulf Oil, Standard Oil of California[4], Texaco[5], Royal Dutch Shell, Standard Oil of New Jersey[6], and Standard Oil Company of New York[7]. The Seven Sisters, along with the other large international oil companies that later entered the market, became known as the '*majors*'[8].

Over the following decades, the major oil companies, with national government backing, engaged in an international competition for control over reserves in the Middle East. The *majors* tried – sometimes with questionable approaches – to reach concession agreements with the governments of oil-producing countries. In 1949, the *majors* controlled 55 percent of the crude oil production in non-communist countries; the figures of refining, transport, and marketing were not far off. Most of these concession

[4] Now known as Socal.

[5] Now known as Chevron.

[6] Also known as Esso.

[7] Now Known as ExxonMobil, after a merger (Exxon) with Mobil in 1999.

[8] In the following decades, a number of large oil companies entered the market, such as Mobil, Total, Conoco, Philips Petroleum Company, and ENI.

agreements required companies to pay oil-producing governments a tax on profits from oil exports. This tax was calculated using a public price, known as the posted price, which accounted for 50 percent of the profits (Tanzer, 1974: 27).

Throughout the 1950s new oil discoveries, and the rapid expansion of supply, led to continuous reductions in the market price of oil, which led producing countries to request frequent readjustments of the posted price. The reduction on tax payments to oil-producing countries eventually triggered the creation of one of the most well-known international organisations, the Organisation of Petroleum Exporting Countries (OPEC). Formed in 1960, the OPEC initially comprised Iran, Iraq, Kuwait, Saudi Arabia, and Venezuela, although its membership reached as many as thirteen by 1975. The main goal of the OPEC at the time was to keep posted prices as high as possible. In the 1960s, the organisation secured small concessions and the redefinition of the posted price from a market-driven figure into a tax reference price. However, the OPEC was ill equipped to act as a cartel owing to the diversity of its members so, until the 1970s, the *majors* were able to defend their best interests vis-à-vis the governments of oil-producing countries, thereby maintaining their favourable market position.

In 1970–71, Libya's successful pressures for progressive production cuts from Occidental, an independent oil company, marked the OPEC's first victory. As Occidental was dependent only on Libya's oil, and Exxon withheld assistance, the company had no choice but to abide by Libya's demands (Bromley, 1991: 142). This sent a wave of gradual increases in crude-oil posted prices from Libya to Nigeria and all the Mediterranean ports that controlled the traffic of Iraqi oil. The initial 30-percent increase in posted price and 4-to-8–percent (Bromley, 1991: 142) increase in tax rate was swiftly reproduced by the rest of the OPEC. The closing of the Suez Canal, the damage in the Trans-Arabian oil pipeline, and the 1967 Arab-Israeli War also played a significant role in the above price increases (Odell, 1986: 225).

In 1971, six of the OPEC countries allegedly entered a bargaining process with two major oil companies. Nevertheless, not much bargaining is believed to have taken place at these meetings as both the US government and the *majors* had strong economic and

security interests in an oil price increase. That year, the Middle-Eastern members of the OPEC increased the price of crude oil in fulfilment of what are now known as the Tehran and Tripoli agreements (Tanzer, 1974: 125). Though the general conditions of the market barely changed as a result, the signing of these agreements marked the first time that the OPEC countries negotiated as a unit with the *majors* and, even more strikingly, that they did so with the approval of the US State Department. Unbeknownst to both the *majors* and the US government, this was the beginning of the end for their control of the oil industry.

As described thus far, the history of the oil market up to the 1970s features as many as three distinct actors, namely oil-producing countries, oil-importing countries, and oil corporations, whose responsibilities ranged from extraction to marketing. During the first years of the oil market, the balance of power between these three actors was widely in favour of the oil-consuming countries. By pulling the strings of the *majors*, oil-consuming countries commanded a cheap and secure supply of oil, while also overseeing the mechanisms and profitability of extraction and marketisation. It is not surprising, therefore, that the main economic powers of the time, such as the US, the UK, France, and the Netherlands, went to great lengths to secure exclusive access to the supplies of several oil-producing countries for their respective oil corporations as a way to pursue their geopolitical agendas (Tanzer, 1974; Bromley, 1991). By contrast, oil-producing countries were the least influential actors in that period, owing to the lack of cooperation and leadership. As a result, they gained minimal returns on the volumes of oil extracted until then.

This balance of power turned on its head over the 1970s. The foundation of the OPEC, the Occidental incident, and the 1973 oil shock, in particular, were instrumental in bringing the balance of power to the point where oil-producing countries gained full control of the market, while oil-importing countries were left as price-takers. Deprived of market power, the once powerful *majors* gradually turned into transnational corporations in order to promote their own interests and fight for their own survival. At the same time, oil-producing countries launched a new type of oil company, i.e. national oil corporations, in order to better defend their newly acquired market power.

This understanding of the structure and actors of the oil market until the 1970s is central to the argument developed in this thesis. This is because the triangular structure of oil-producing countries, oil-importing countries, and oil corporations underwent a fundamental transformation since the 1980s. With the emergence of the process of financialisation in the dynamics of the oil market, a fourth group of actors wended its way in the already delicate structure of the oil market. As argued in the following chapters, this reconfiguration had a transformative impact on the very processes, functions, and dynamics described thus far.

PART 1

OIL AND FINANCE: A CONCEPTUAL FRAMEWORK

1 Approaches to Financialisation

The political-economic triangle that dominated the structure of the oil market up until the late 1970s can be made more visible through the study of the dynamics between the actors involved. Chief among them were the oil-importing countries. Their main interest was for oil prices to remain as low as possible in view of the fact that access to cheap sources of energy would secure economic stability, security, and prosperity. Indeed, the link between cheap energy sources and economic growth was recently confirmed by Eurobarometer reports citing access to cheap energy sources as one of the five most important factors in the creation of new businesses and foreign direct investment (Standard Eurobarometer, 1990-2008).

Oil-importing countries vary in one important respect: oil import dependency. The degree of oil import dependency depends on technological levels as well as economic and productive structures (International Energy Agency, 2005). More specifically, the two main factors behind variation in import dependency are funding availability for innovative research and geographical proximity to countries with access to alternative energy sources, such as gas, but also solar, wind, thermal, or hydroelectric energy.

Oil-importing countries can be separated further into two different categories: developed and developing countries. In the context of the oil market, there is a significant difference between the two. First of all, developed countries are better organised through such organisations as the OECD and are therefore better equipped to promote their interests in international bargaining. Secondly, the members of the OECD are the biggest oil importers and accordingly wield more negotiating power than developing countries. Thirdly, the largest economies have had time and resources to build up enough oil reserves to be able to influence its price in the case of a reserve release as well as to subsidise its consumption. Indeed, most developed countries have the ability to maintain oil consumption levels relatively constant, by underwriting rising costs as necessary. Finally, increased research funding, technological advances, and a progressively less industrial economic structure have made developed countries increasingly energy efficient. Initiatives such as the Kyoto agreement have also assisted in this development. As a result, developed oil importers enjoy considerable influence in the oil market, thanks to high purchasing powers, inelastic demand levels, and comparatively low import dependency.

In contrast, the situation is all but reversed in the case of developing countries. On account of lower developmental and technological levels, developing countries are unable to command as much energy efficiency, institutional organisation, and negotiating power as developed countries (International Energy Agency, 2005). In developing economies, therefore, oil consumption levels are highly dependent on the price of oil. The high elasticity of oil demand is illustrated in Figure 1, which reproduces an EIA map plotting Thompson Reuters data on average levels of GDP and oil consumption in non-OECD countries. Such high degrees of elasticity in oil consumption imply that the productivity levels of developing countries are inextricably tied to the fluctuation of oil market prices.

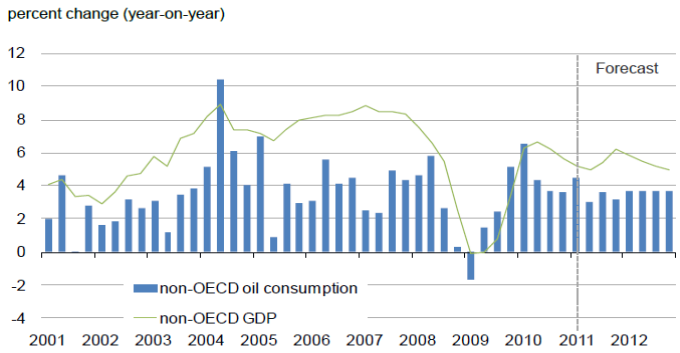


Figure 1-1 Non-OECD Oil Consumption and GDP (EIA, 2012)

This fundamental discrepancy between developed and developing countries is related to the different determinants, and therefore different *intensity*, of oil demand. It has been suggested that, especially for developed countries, one such determinant was the combination of the energy crises of the 1970s and the introduction of several energy efficiency regulations, such as EU environment policies and the Kyoto agreement. This effectively led a large number of industries to reduce their oil requirements and improve their methods of energy conservation by investing in either energy-efficient equipment or renewable sources of energy (World Energy Council, 2008). An additional determinant was the Green movement, which, over the past decades, has actively campaigned to spread awareness of energy efficiency and ecological sustainability. Figure 2, drawn from Baumaster and Peersman (2009), paints a telling picture of the reduction of oil intensity in US total production since the 1970s.

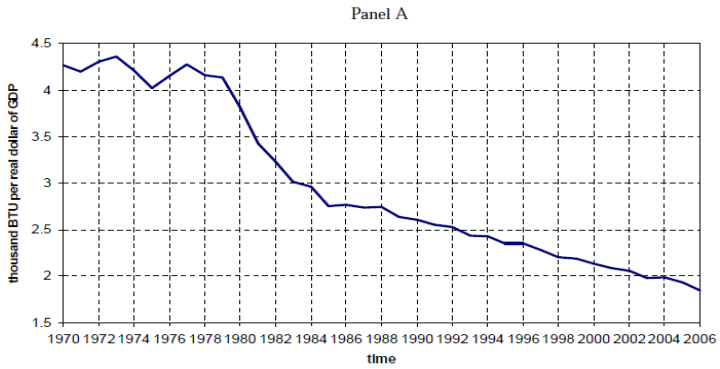


Figure 2-1 US Oil Intensity of Production (Baumeister and Peersman, 2009a)

On the other hand, oil intensity of production remains much higher in non-OECD economies. Held back by low technological levels, the industrial and agricultural apparatus of developing countries requires higher amounts of oil per unit of output – almost twice as much as developed countries (International Energy Agency, 2005). As a result, developing countries are far more vulnerable to increases in the price of oil, and equally short on real negotiating power over it.

Baumeister and Peersman suggest that the key determinants of oil intensity are independent from the above-mentioned global economic cleavage. Changes in oil intensity are argued to be linked to changes in the composition of oil demand: as new energy-efficient technologies are developed, demand for oil converges in those oil-intensive sectors where new technologies are still either very costly or very difficult to make. In fact, these sectors, which include heavy industry, transportation, and the production and consumption of electricity, have even increased their energy requirements due to the introduction of advanced, energy-intensive machinery. These counter-current technological pressures further intensify oil consumption, thereby making the oil demand curve steeper and more inelastic (Baumeister et Peersman, 2009a).

Be that as it may, countries with high oil intensity of production, not only lack easy access to new technologies or alternative energy sources, such as solar, geothermal, wind, or gas; they also have no other option than to purchase oil at any quoted price, regardless of their macroeconomic conditions. To be sure, on many occasions, oil-producing countries have entered into agreements to improve the terms of payment of developing oil importers. The fact remains, however, that such practices, for all their short-term benefits, discourage developing countries from seeking more energy-efficient productive methods and, in addition, lock them in a cycle of debt to the benefit of the oil producers.

The question of oil prices warrants a further distinction among oil-importing countries, one between the US and the rest of the world. This discrimination centres on the fact that oil, as a tradable commodity, is only marketed in US dollars. Oil prices, as a result,

vary considerably across the US and the other oil-importing countries, because they are dependent on the value of the dollar in the international markets and therefore directly linked to exchange rates. This is of considerable importance to understand the political economy of oil because it highlights the extent to which the US lead over other oil-importing countries is directly dependent on the performance of the dollar relative to other currencies (Roubini and Setser, 2009a).

The relationship that links oil with parity between the US dollar and other currencies has become an area of heated debate in academic and financial circles over the past decade (Amano and van Norden, 1995; Benassy-Quere and Mignon, 2007; Breitenfellner and Cuaresma, 2008; IMF, 2008). Studies by Akram (2009), Krichene (2006; 2008), Diwan (2008), and the Deutsche Bank (2008; 2009) suggest the existence of a positive correlation between the value of the US dollar and price levels in the crude oil market. The International Monetary Fund goes even further, by attempting to explain the movements of oil price levels by reference not only to the value of the US dollar, but also to the international total industrial production, US interest rates, and OECD crude oil inventories (IMF, 2008). Methodological differences aside, the general consensus of all these studies points to an unequivocal link between the US dollar and the price of crude oil.

The oil market has been officially traded in US dollars since 1974. The roots of this historical development lie in the 1973 oil shock. Following the abolition of the Gold Standard, the US government struck a secret deal with Saudi Arabia in 1974 for oil to be marketed exclusively in US dollars. This compelled all oil-importing countries to expand their stock of dollars. This move allowed the US government to control the oil market and to strengthen the position of the US dollar as the dominant international currency (Baumeister and Peersman, 2009a). The increase in Eurodollar holdings as a consequence of this deal was exponential: overnight and term Eurodollar holdings increased fifty-fold over the late 1970s and early 1980s (World Trade Organisation, 2008).

Even though there is no universally accepted theory on the type of link between oil and US dollar parity (Austvik, 1987; Habib and Kalamova, 2007; Coudert et al., 2007), empirical studies by Chaudhuri and Daniel (1998) and Park and Ratti (2008) lend credit to the hypothesis of a causal relationship. The fact that the oil market operates in dollars is key to this argument. As all oil-producing countries, with the exception of those belonging to the eurozone, trade in dollars, a drop in the value of the US dollar against their national currencies will necessarily result, *ceteris paribus*, in loss of income. Loss of income, in turn, leads to decreased levels of production as well as lower investment in productive capacities, particularly in excavation methods, pipeline networks, new reserves, and technological innovation. This creates an incentive for oil-producing countries to attempt a revaluation against the currency in which they are paid in order to preserve their original profit levels.

At the same time, oil-importing countries, apart from the US, are influenced by the dollar price of oil through their exchange rate parity. If their local currency appreciates against the dollar, then the price of oil for them will drop, and vice versa. This, however, leads to an increase in the price of oil, as lower prices will boost overall demand. In the US, on the other hand, the price of oil is expressed and marketed in terms of US dollars, which makes its purchasing power of oil strictly dependent on the value of its currency. While oil-producing countries translate the price of oil in US dollars in such a way as to preserve their profit levels, the devaluation of the US dollar is not ultimately reflected onto the price of oil, insofar as the latter readjusts itself relative to its international value. Therefore, the devaluation of the US dollar only generate higher prices per barrel of oil in terms of dollars themselves; in other words, the real price of oil remains essentially unchanged in all international currencies but the US dollar.

In describing the configuration of the oil market, the nature and composition of oil-producing countries deserve equal analytical attention. Oil-producing countries can be separated into several categories, although the primary distinction runs along the Arab vs non-Arab divide. This separation is reinforced by the existence of two different oil-producing organisations, the OPEC, or Organization of the Petroleum Exporting

Countries, which now includes most oil-producing countries, and the OAPEC, or Organization of Arab Petroleum Exporting Countries, which only includes Arab oil-producing countries. Though subject to considerable political influence (Rustow, 1982: 154), both organisations, are constrained by the limits of cooperation and coordination of their membership.

One of the main differences between the two organisations is that the economies of OAPEC, unlike those of the OPEC, are all but entirely dependent on oil production. Here, growth levels are much lower than oil returns would otherwise allow for; barring a few exceptions, educational and technological levels remain similarly low. In addition, oil-producing countries that belong to neither organisation, notably Russia, Norway, Mexico, and Canada, mostly cooperate with the OPEC on an *ad hoc* basis in an attempt to preserve their independence of action within the market.

A second cleavage among oil-producing countries is determined by the quantity and quality of the natural resources at their disposal. Countries with high volumes of oil reserves, such as Saudi Arabia, Iraq, Iran, and Russia, exert greater influence in production negotiations and, therefore, greater responsibility in the determination of price levels. Influence is also connected to the quality, rather than quantity, of oil reserves. High-quality oil is cheaper to refine, which allows for higher profit margins and, often, more expensive final products.

More precisely, the quality of crude oil is assessed in terms of acidity (API) and sulphur content: the higher the acidity and sulphur content (heavy-sour crude), the higher the cost of refining. When the resulting product slate includes a higher percentage of lower-quality products, they will accordingly trade in lower prices. A light-sweet crude oil, for example, requires less elaborate refining technologies and its product slate includes a higher percentage of middle distillates, such as diesel, which are marketed at a premium, and thus assist in the profitability of the refinery. These quality considerations, however, do not inhibit the production of many other types of refinery products. Low-quality products such as asphalt, naphtha, fertilizers, and lubricants are in continual demand and lower-quality crude is relatively inexpensive. Other

considerations that come into play in the choice of refineries are the quality of crude oil produced domestically and in neighbouring countries as well as the kind of trading partners and trading routes available, especially if fitted with pipelines or other transportation advantages.

As a result, the quality of a country's crude oil reserves determines its negotiating power according to the number of refineries that require its particular quality of crude as well as the absence of crudes with equal or similar quality in close geographical proximity. One such example is the light-sweet crude oil produced in Libya, which is in high demand among European refineries and of higher quality compared to the crude oils available in near and close proximity to the region, namely Russia and the Middle East. Nevertheless, in the ranking and differentiation of producing countries, quality takes a back seat to quantity as oil is still a rare natural resources that unfailingly provides strong negotiating leverage in bilateral relationships with importing countries.

The third group of actors in the oil market is oil corporations. Whether private or public, oil corporations are an integral part of the oil market. Their role has changed significantly with time, as has their nature. In the pre-1960 era, they were enterprises formed and controlled by their (Western) countries of origin, and their main purpose was to serve their governments' pursuit of oil-supply self-sufficiency (Baker, 2009: 35). Up to the early 1970s the *majors* had gained total control over the pricing of oil, and they had managed to acquire exclusive rights on the oil supply of many oil-producing countries. The 1970s oil shocks, however, was to make a fundamental impact on this group of actors.

This is because, prior to the 1970s, the volume of production and refinement of oil were controlled by the *majors*, who paid small rents to the countries that hosted them. Following the events that took place during the 1970s oil shocks, all the power and influence of oil corporations was transferred almost overnight to oil-producing countries. Oil-producing countries were now in control of the volume of oil produced, and therefore its price; in addition, the higher fees they managed to impose on the volume of oil produced secured them an exponential increase in profits. This spelled the

end of the golden age of the oil *majors* and the transition to an era where they no longer had any influence over the pricing of oil or the volume produced. Their functions were now limited to the extraction, refining and distribution of oil. With the curtains falling on the colonial rule of the West, nationalist movements led most oil-producing countries to nationalise their reserves under new National Oil Corporations (NOC) with the mandate to raise higher production revenues. While these NOCs where very successful at the height of OPEC, they progressively lost their profitability as oil entered the financial markets and volatility made its foray with the falling price levels of the 1980s (Baker, 2009: 35). As a result, control of the price of oil progressively shifted from the IOCs to the NOCs and then from the NOCs to the markets.

Nevertheless, the international top ten reserve holders are still NOCs and 77 percent of total oil reserves in 2005 were calculated to be under NOC control (Baker, 2009: 35). The PIW Petroleum Intelligence Weekly (PIW) publishes the most widely recognised ranking of the international[9] oil and gas producing companies includes Saudi Aramco (Saudi Arabia), Gazprom (Russia), NIOC (Iran), Pemex (Mexico), Sonatrach (Algeria), INOC (Iraq), PetroChina (China), KPC (Kuwait), Petrobras (Brasil), Petronas (Malaysia), Rosneft (Russia), ADNOC (Abu Dhabi), Lukoil (Russia), PDVSA (Venezuela), and NNPC (Nigeria) (Energy Intelligence, 20011). At the same time, by contrast, the *majors* – which, in their attempt to remain profitable, had undergone extensive mergers, such as ExxonMobil, BP, Chevron, and the Royal Dutch Shell Group – controlled fewer than 10 percent of the international oil reserve base (Baker, 2009: 35).

This turn from enterprises driven by oil-importing countries, to private corporations, and finally to supply-driven corporations has not completely overshadowed the role of the previous other forms of corporations. On the one hand, the *majors*, if in a less favourable position compared to the pre-1970s era, retain considerable influence and a

[9] The term 'Seven Sisters' is now frequently used to describe the seven NOCs that control the largest oil and gas reserves – to parallel its original reference to the largest IOCs in the 20th century. The 'new' Seven Sisters are CNPC (China), Gazprom (Russia), National Iranian Company (Iran), Petrobras (Brazil), PDVSA (Venezuela), Petronas (Malaysia), and Saudi Aramco (Saudi Arabia).

sizable proportion of the market, depending on the percentage of total oil reserves to which they can lay claim. The power of the IOCs also derives from their capacity for innovation, as well as their drive for profits due to their publicly listed status. On the other hand, most NOCs have very intense links with their national governments, and they are frequently used as a means to pursue geopolitical and strategic interests or national wealth redistribution policies, at the expense of the corporations' profitability and best interests (Baker, 2009: 35). By the same token, absent a strict mandate of profitability as well as a culture of financial and political transparency, the NOCs have lagged behind the *majors* in investment efficiency and resource allocation (Baker, 2009: 35). Most of the time however, whether in private or national garbs, IOCs and NOCs operate jointly in the exploration, production, and processing of crude oil internationally. As such, they are considered as one actor in the context of this thesis.

The function of oil corporations has evolved over time and their influence in the oil market has strengthened in tandem with their investments. Oil corporations have made large-scale investments not only on the development of more efficient refining technologies, such as shale/tight, oil sands, ultra deep water, and pre-salt production, but also on the discovery of new reserves as well as on research for renewable and alternative energy sources. For oil corporations, the main aims of such investments are to secure their future in the case of oil depletion or substitution, to apply lobbying pressure on the governments of oil-producing countries, and to further differentiate their energy products so as to allow for larger profit margins. A notable example of the effects of such strategic investments is offshore drilling, which, by proving the viability of undersea oil fields, has changed the landscape of the oil market with the addition of new oil producers (Adelman, 2004).

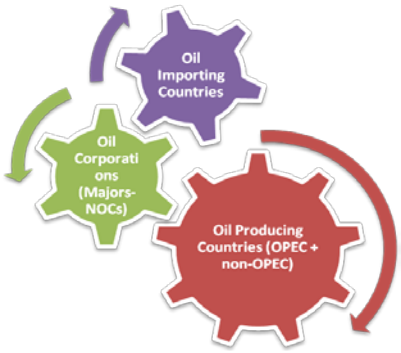


Figure 3-1 1862–1979 Oil Market Triangular Structure

The above analysis of the groups of actors that dominated the oil market up to 1979 reveals a triangular structure. It was the interaction among oil producers, oil consumers, and oil corporations that determined production levels, price, as well as investment and research. Even though the interests of each of the three actors are different with regard to the price level of the underlying commodity of the market, they all have an inherent interest in price stability. Both consuming and producing countries need to be able to project their balance sheets, while their economic performance is heavily dependent on the price of crude oil, as shown in the following chapters. Oil corporations, too, require price stability to alleviate the risks of capital investments and to costs of debt.

This triangular structure is illustrated in Figure 3. Oil consuming countries feature, here, as the primary actor in the triangle by virtue of the privileges associated with their enjoyment of very low-cost oil thanks to the geopolitical yoke of their national oil corporations over oil-producing countries. This relationship reversed after the rise of the OPEC and the 1973 oil shock, when oil-producing countries, together with their newly introduced nationally controlled corporations, wrenched control of oil production and pricing from importing countries. Finally, this change led Western oil corporations to decouple from their national roots and embrace transnational and market-driven interests.

This overview of the structure and actors of the oil market until the end of the 1970s opens the way for a closer analysis of their evolution in time. This analytical step is

crucial to the argument of this thesis, as it reveals the existence of an underlying dynamic that has fundamentally altered the way the actors of the oil market structure interact and operate. In order to study the nature of this dynamic, and the changes that have taken place in the oil market in the post 1980s era, including the oil shocks, the following analysis will move on two fronts. The first front will present the traditional, and more theoretical, explanation of the transformation of the oil market, i.e. the 'peak oil' argument. This argument attempts to explain the asymmetries of the oil market by reference to the scarce and naturally exhaustible nature of oil as a commodity. The second front is more current, especially in the field of commodities markets and deals with the process of financialisation. This argument will be explored at length in the second chapter.

1.1 Peak Oil

The peak-oil argument has always been cited in connection with any rise in the price level of oil. This is because oil is a scarce and naturally exhaustible commodity that makes itself obsolete in the process of being used; therefore, fear that the main global energy source might run out can be both the cause and the consequence of an increase in the level of oil prices. The future of oil, and its ability to supply the world with a stable, cheap, and efficient energy source, has been subject of intense debates. The notion of peak oil, in particular, does not refer to the depletion of oil reserves, but to the point in time when global oil production ceases to increase and hence stabilises, or decreases, altogether (Graefe, 2009: 3).

The peak-oil argument was first introduced by a geologist by the name M. King Hubbert who, in 1950, put forward the idea that the geological structure of an oil field could give important clues as to its future production capacity (Hubbert, 1950). He proposed that the production capacity of every oil field follows a bell-curve shape whereby, once full capacity is reached, a sharp decrease in production gradually gives

way to complete depletion. As this model fit the lifecycle of the US oil fields of the period, Hubbert's thesis attracted a large number of followers (Maugeri, 2009: 8).

Hubbert's thesis was not the first approach to the economics of naturally exhaustible resources. The Hotelling model, put forward by Harold Hotelling in 1931, had long been the basic model of reference for several later theories (Hotelling, 1931). This model employs the notions of 'scarcity rent' or 'user cost' (Kronenberg, 2006) to represent the excess market price of the resource against its marginal extraction cost. This allowed discussion of the scarcity and exhaustibility of the resource along with the marginal benefit of not extracting, or conserving, it. In its basic format, Hotelling's model sees producers as having the possibility to decide either to extract immediately and invest their profits at the constant interest rate, or to postpone extraction until there is an expectation that future prices will rise against the interest rate (Cinti, 2008). Framed as such, Hotelling's model introduced the element of exhaustibility, along with those of price and time. He suggested that, given the constant price increases, which would be at least equal to the interest rate, and the progressive reduction of commodity availability, the resource will eventually reach exhaustion long before its price stops spiralling high enough to send demand into a nosedive. Similarly to Hubbert, therefore, Hotelling describes price fluctuation as a bell-shaped trend tightly linked to the availability of the resource (Cinti, 2008).

The ideas introduced in the two models above have gained several followers throughout the years, including academics, journalists, politicians, and oil market actors, who have claimed that oil production has already reached its peak levels, or that it will do so very soon. These arguments have been made at different points over the past two centuries, with different peak dates in mind. What was common to all of them, however, was the level of uncertainty that they unfailingly injected into the market. Fears of an imminent peak oil have often been associated with short-term increases in oil price levels, as widespread expectations of higher prices increase current demand, be it for daily consumption or investment reasons, which, in turn, raises the actual price level. Once peak-oil fears spread, the levels of investment in the oil market increase due to the expectation that prices will rise as supply is increasingly unable to meet demand

(Adelman, 2004: 6). Peak-oil fears have repeatedly shaped and reshaped the expectations of all the actors involved directly or indirectly with oil and its products (Adelman, 2004: 6). As a result, on the understanding that the actual peak oil has not been reached, any shock in the price of oil associated with peak-oil fears is to be considered demand-driven.

This raises the question of whether abnormal price increases can ever be considered only the result of an alleged peak oil, to the exclusion of other factors. A peak-oil–driven increase in the price of oil is expected to cause an abrupt inflow of capital as a result of the panic that surrounds the expectation of higher prices. Interestingly, this is similar to what happens when other kinds of market factors are at play, such as speculation. Drawing a distinction between these two main explanatory approaches may be a tall order in times of crisis, but it can easily be attempted in their aftermath. To solve the puzzle, it is first necessary to determine whether peak oil has, in fact, ever been reached.

While it is reasonable to assume that the world's reserves are ultimately finite, it is important to bear in mind that it is not currently possible to assess just how finite they actually are (Adelman and Watkins, 2008). The frequent confusion, and partial overlap, between the semantic categories of oil resources, oil reserves, recoverable resources, unprofitable resources, and oil qualities adds to the complexity. While the term 'resources' describes the totality of oil, both known and unknown, 'recoverable resources' denote the share of total oil resources that can be exploited at current levels of technology. Of these, 'unprofitable resources' are recoverable resources that are too costly to extract and market at the current levels of prices, while 'oil reserves', refer to those that, at the same level of prices, are both attainable and marketable (Maugeri, 2009: 9). Most of these categories can be further divided according to oil quality. For example, lower-quality oils, being expensive to refine, are *ceteris paribus* more likely than others to be classified as unprofitable resources. The question is further complicated by the fact that inventory data are often inadequate or unavailable, with countries on both the producing and purchasing side withholding information or not

supplying any at all. These countries, which include China and most other non-OECD economies, are thought to account for about half of the total global oil demand.

Taking these difficulties into account, it may be helpful to compare estimates to recorded data. During the 1970s, the non-OPEC country reserves were calculated at 200 billion barrels of oil; and yet, within the following thirty-three years the same cohort managed to produce 460 billion barrels, with allegedly 209 billion more remaining (Adelman, 2004: 3). Similarly, the OPEC countries claimed 412 billion barrels in proven reserves in the 1970s but, over the same thirty-three-year period, produced 307 billion barrels and recorded another 819 billion in reserves (Adelman, 2004: 3). Producers seem to always find more of what they are using up. Another telling trend among oil-producing countries is that of unexploited fields. Saudi Arabia, for example, has over eighty known oil fields in its territory, but exploits only nine. Finally, there are even known oil reserves in countries that do not currently produce any oil.

There are a number of factors that account for unexploited oil fields. The most common ones are the level of technology, often insufficient to reach some of the oil; the quality of the oil itself, which may make it unprofitable at current prices; the amount of investment and technological know-how required, which may be difficult to maintain; and, finally, domestic interests connected to internal self-preservation or the international political status quo. Such is the case in the east Mediterranean, for example, where oil reserves, though proven, go unexploited, because they stretch across the borders of volatile, and in some cases turbulent, regions.

Moreover, should Saudi Arabia exploit all eighty of its known fields, not only would oil, or higher-quality oil, deplete much faster, but supply would also go up and consequently drive oil prices down (Adelman, 2004: 3). In fact, investing on exploration and development is not as beneficial to oil-producing countries as might be expected. Advances in technology, know-how and reserves exploration can very easily change the map of oil production as we know it. Offshore drilling is a telling example of this. While underwater fields were not a feasible option before the 1960s, wells started being drilled at a depth of 1,000 feet in 1975 and reached up to 10,000 feet in 2000 (Adelman,

2004: 3). Sure enough, this significantly narrowed the gap in oil production between OPEC and non-OPEC countries.

Recent calculations estimate that global oil reserves currently stand at 1.2 trillion barrels (Oil and Gas Journal, 2007), which is enough to maintain a steady supply of oil for the next thirty-nine years if demand remains constant. The additional 1.4 trillion barrels of calculated recoverable resources would ensure supply for eighty-six years (United States Geological Survey, 2000). According to the IEA oil market reports (International Energy Agency, 2005-2009) and the USGS (United States Geological Survey, 2000) from the estimated seven to eight trillion barrels of total reserves available worldwide, only one trillion has been consumed since oil began selling as an energy source. This estimate does not include unconventional oils. These 'heavy' oils, as they are also known, impose such high costs of refinement that they are generally used for secondary purposes only, such as tar (Maugeri, 2009: 9). Their inclusion would raise the total estimate of global oil reserves to about nine trillion barrels – far more than anything claimed by most authorities, experts, and oil market actors. The fact that just a fraction above one tenth of the total known oil reserves has been consumed thus far is proof that there is no imminent danger of oil depletion (Maugeri, 2009: 9).

In addition to these estimates, it is also worth noting that only a modest part of the actual oil reserves is known to us today, less that thirty-five percent of which is recoverable at current technological levels (Maugeri, 2009: 9). In reference to this, Downey, Threet and Morgan, in their *Petroleum Provinces of the Twenty-First Century* (2002), have introduced the notion of 'reserve growth' to describe the phenomenon whereby advances in technology and know-how encourage a more intensive and prolific exploitation of oil wells, thus allowing oil reserves to 'grow' as a result. This phenomenon explains the increase in recoverable resources and reserves regularly observed in the wake of scientific and technological advances in oil extraction (Maugeri, 2009: 9).

Equally difficult to include in the total estimates are data on oil held in tankers, also known as 'oil at sea', and oil intentionally left underground. Intentional supply

restrictions are easy to mistake for peak oils. A study by the UK Cabinet Office (2008) concluded that the increased correlation between oil futures and spot prices between 1994 and 2007 exemplifies how oil price expectations can motivate producers to intentionally restrict production volumes to induce inflationary pressures on the oil market. This is a view shared by George Soros (2008), who claimed that producers have a strong incentive to keep their oil reserves underground when they can expect to sell them for a higher price at some point in the future. King Abdullah of Saudi Arabia admitted as much in a recent interview. '*I keep no secret from you that when there were some new finds*', King Abdullah was quoted as saying, '*I told them, "no, leave it in the ground, with grace from God, our children need it" '* (Waterman, 2008). Statements of this sort are revealing of the influence of supply restrictions and of the power that they confer to producing countries at times of oil shocks and in the modern oil market more generally.

A strong indicator of the important role that producing countries play in the modern structure of the oil market is the impact of the OPEC announcements on the level of spare capacity over the price of crude oil (Lewis and Reddall, 2011). The level of spare capacity is a measure of the ability of producing countries to adjust production levels in response to a hypothetical supply or demand shock. As such, this notion is closely linked to the peak-oil argument, in that the absence of a positive level of spare capacity is believed to be a harbinger of peak oil.

This connection, however, is tenuous. Not only are the levels of spare capacity announced exclusively by oil-producing countries, with little to no third-party verification, but they reflect the alleged capacity of production, and reserves under use, only at the current time and level of technology. It comes as no surprise, therefore, that, as Robeco fund manager Peter Csoregh put it during the 2011 Energy Summit in London, '*there's an inherent bias, especially in the Middle East and Saudi Arabia, to overstate their spare capacity*' (Lewis and Reddall, 2011). Additionally, these levels do not represent a reliable calculation of either the total availability of oil or its potential increase upon further exploration and extraction. These levels only represent the

claimed capacity of production that the current extraction facilities are alleged to provide.

Echoing this point, Goldman Sachs' global head of commodities research, Jeff Currie, also present at the 2011 Summit, noted that,

> If you get up to 10 million barrels per day, you start to really create a very tight market relative to spare capacity, but the question that's more appropriate is when do you get to 9.5, when do you get to 10? Because when you start to look out over the horizon, their ability to create more flexibility in spare capacity increases tremendously. (Lewis and Reddall, 2011)

This is not to say that spare capacity announcements are not true. Rather, it is a reminder that they cannot be assumed to be always valid and reliable, let alone free of political influence. This is all the more significant in light of the fact that, thanks to their immediacy and public availability, spare capacity announcements have attracted a near-universal following among the actors involved in the oil market and, as such, have played a part in shaping their expectations and investment patterns around the fear of a possible peak oil, as discussed below.

The uncertainty surrounding the data behind the peak-oil argument suggests that there is no concrete proof that peak oil – which remains an indubitable future probability – has ever been reached. The fact remains, however, that *virtual* peak-oil events, namely widespread peak-oil fears, have demonstrably influenced oil market behaviour on several, if brief, occasions. Insofar as *actual* peak oil has not yet been reached, it follows that the recent changes in the structure, behaviour, and even functions of the oil market call for an alternative explanatory hypothesis.

If not connected to an actual change in supply, the driving forces behind the transformation of the oil market over the past decades are to be found elsewhere. Recently, a number of actors in the oil market, including the secretary of OPEC, have openly blamed the rise of the paper market – the market, that is, of financial products, such as options, futures, and indexes, which use crude oil as the underlying commodity

(Interview 2, 2012). The speed at which these products have gained currency over the past decades makes a compelling case for hypothesising the concept of financialisation as an important driving force behind the evolution of the oil market. The next chapters introduce the process of financialisation and investigate whether it can be adopted as a valid explanatory approach to the transformation of the oil market over the course of the past three decades.

2 The Anatomy of Financialisation

> To fix the 'sick' economy, Dr Nixon, as he was called in a subsequent headline in the New York Times, tried shock therapy. In a televised speech Nixon, upper lip wet with sweat, voice resonant, announced that he had signed a presidential order freezing wages and prices for ninety days. He said he would try to persuade the Congress to make it illegal for unions to strike during that time, that he imposed 10 percent surtax on imported automobiles and other products, and that he would propose a cut in income taxes to the Congress. He also said, to quote the day's vernacular, that he had closed the 'gold window'. (Cooper, 1992)

This chapter introduces the concept of financialisation: its origins, its main theoretical and methodological understandings, and its effects. The main focus is to emphasise the distinction between the institutional and macroeconomic approaches to the study of financialisation, by shifting between the concepts of embeddedness and disengagement, on the one hand, and the concepts of real production and finance, on the other. This will expose the limitations of traditional approaches to the study of the effects of financialisation on the markets and the international financial system. In doing so, it will be possible to identify and isolate the underlying mechanism of the financialisation process, and then use this basic standard to test the existence of any underlying financialisation features even in non-financial markets.

The present discussion of the financialisation process is warranted by the fact that the past 30 to 40 years have witnessed an unusual development in the macroeconomic landscape of a number of advanced economies: at times of dwindling physical investments, these economies reported sustained increases in profit rates (see Boltanski and Chiapello, 1999; Hopner, 2005; Dumenil and Levy, 2005; Krippner, 2005; Stockhammer, 2005). In response to the seemingly counter-intuitive nature of this phenomenon, academics have been left scrambling for a coherent explanation, with

authors advancing a whole range of different approaches to capture its causes and effects.

It is in the context of this debate that the concept of financialisation, however recent or controversial, promises to offer a helpful explanatory platform. As an academic term, the notion of financialisation has been part of the social-scientific vocabulary for over twenty years (Nesvetailova, 2012). During this time, up to fifty different definitions have been provided by scholars from a wide variety of academic disciplines, including human geography, sociology, political science, economics, and political economy (Nesvetailova, 2012). Broadly speaking, though, the study of financialisation can be simply understood as the analysis of the kind of evolutions and transformations that occur within the structure of the financial sector as well as between finance and other areas of human activity (Stockhammer, 2004b: 720-721). The process of financialisation is studied at multiple levels, from the national and international level to the more institution-centred levels of markets and firms. This degree of analytical depth makes the concept of financialisation an essential diagnostic tool to understand the mechanism and effects of the macroeconomic transformations discussed in this paper.

While disagreements abound on the nature, originality, significance, and consequences of the process of financialisation (Palley, 2007; Bellamy and Magdoff, 2009), it is generally agreed that the last 40 years have witnessed the growing importance of '*financial motives, financial markets, financial actors, and financial institutions in the operation of the domestic and international economies*' (Epstein, 2005). The roots of this form of financial ascendancy are widely accepted to coincide with the announcement of the end of the gold standard and the subsequent demise of the Bretton Woods system[10], which marked the beginning of what is known as the post-Fordist

[10] The Bretton Woods system was named after the place (Bretton Woods, New Hampshire) where forty-four country representatives met in July 1944 to discuss and agree, among other things, on a new international monetary system. The system agreed at this meeting called for fixed exchange rates against the US dollar and a stable conversion rate of the dollar to the ounce of gold equal to $35 (Copeland, 2005). The members of this system were to hold their reserves in gold or dollar assets while reserving the right to sell dollars to the US Federal Reserve for gold at any time. This became known as the gold window. The Bretton Woods agreement also laid the foundations of the

period (Jorda et al., 2011). This was the biggest watershed in the international economic system since the Great Depression: the official link hitherto existing between gold and the US dollar, with the former acting as the underlying commodity of the latter, ceased to apply and the US Federal Reserve, now able to print money at will, was freed from the obligation to sell gold to foreign central banks in exchange for dollars.

This historical juncture in the international monetary system was central to shaping the financial status quo of the 21st century. Harry Magdoff and Paul Sweezy (1969) maintained that the abolition of the gold standard and the introduction of the 'paper dollar standard' was a fatal blow to the international monetary system. This is because the US traded the privileges of controlling the gold exchange standard with the even greater privileges that came with control of the paper dollar exchange standard.

With the abolition of the gold standard and the elections of Ronald Reagan and Margaret Thatcher, the financial markets in both the US and the UK underwent extensive deregulation policies. The *Big Bang* deregulation of the City of London in 1986 in the UK and the abolishment of the Glass-Steagall Act by President Bill Clinton in 1999 in the US are classic examples of this historical development (Casey, 2011). Finance had now '*penetrated across all commercial relations to an unprecedented direct extent*' (Fine, 2009c) and transformed the functions of everyday life as never before (Blackburn, 2006).

The study of financialisation can be approached from either a historical angle, in the form of a systemic analysis of 'finance-led capitalism', or from an institutional, and more contemporary, perspective. While the former approach focuses on the effects of the growing influence of the financial industry on the broader economy, the latter draws special attention to how the '*various realms of human activity are absorbed by the financial dynamics and become new elements of the financial system*' (Nesvetailova, 2012).

International Monetary Fund (IMF) as a system that would support the economic stability of countries in need, while promoting neoliberal economic principles (Pilbeam, 2006).

Hard data on the wide-ranging effects of the financialisation process has been furnished in a number of different studies, most notably the ones by Krippner (2005), Duménil and Lévy (2003), Höpner (2005), Stockhammer (2004b), and Boltanski and Chiapello (1999), where the question of the simultaneous fall in investment rates and rise in profit rates is investigated in great detail. Of particular note are also the works of Stockhammer (2004b) and Crotty (2003), who turn the spotlight on the negative impacts of financialisation on increased investment, and the work of Orhangazi (2008a), who applied their approach on the US economy. A common conclusion of all these studies is that financial profits have increased significantly relative to non-financial profits owing to the decoupling between the financial markets and the broader macroeconomy and, consequently, to the fact that profits are increasingly generated through financial channels rather than trade and commodity production (Krippner, 2005: 174).

According to the 2008 US Economic Report of the President, financial profits as a percentage of total domestic profits in the US has risen from below 20 percent during the 1980s to above 25 percent in the 1990s and up to 40 percent in the 2000s (Economic Report of the President, 2008). Similarly, data from the US Bureau of Economic Analysis show a steady decoupling of the real corporate profits of financial and non-financial sectors, which started in the 1980s and markedly accelerated in the 2000s. These data suggest that, in the space of two decades, the real corporate profits of the financial sector have not just outstripped those of the non-financial sector – they have grown to twice their size (US Department of Commerce, 2009).

It is particularly instructive to note, for example, that, as indicated in the data used in the studies cited above, partly drawn from the Bank for International Settlements, the daily volume of foreign exchange transactions stood at $570 billion in 1989, but was already clocking in at $1.9 trillion by 2004 (Trichet, 2009b; Papademos, 2009c). Similarly, Baker, Epstein and Pollin (1998), in their study on financialisation, show that the percentage of funds raised on international financial markets rose by 15 percent of the total world exports from 1950 to 1996. Further evidence comes from Duménil and Lévy (2003), who use data relative to the US and France to illustrate the steady increase of returns on financial assets, as a share of total disposable income, over the past twenty

years. Just as importantly, they also find substantial evidence of the reduction of the profit rate of non-financial corporation's relative to their financial counterparts from the 1970s to the 1990s in both the US and France, yielding results that correspond to those obtained by James Crotty (2008) in his study on US financialisation after 1984.

One last study worth noting here is the attempt by Epstein and Jayadev (2005) to widen the sample of data to all the OECD countries. Their study show evidence of financialisation in the majority of the OECD countries, especially in the period between the late 1970s and the early 1980s, which recorded a significant and sudden increase in financial activity and profitability compared to changes in real production levels. The findings of Epstein and Jayadev (2005) attest not only to the decoupling between the profitability of the production and the financial sector, but also to a change in market preferences. The period between the late 1970s and early 1980s, which is the focus of their study, is especially important because it coincides with the form of financial ascendancy discussed above and thus betrays the influence of market liberalisation in the financialisation process.

The study of financialisation offers compelling evidence that the financial industry has penetrated most sectors in advanced economies. The rapid spread of the process of financialisation was arguably precipitated by the promise of short-term profits in financial investments, and then further facilitated by the deregulatory policies and technological advances of the last 40 years. Although the study of financialisation is relatively recent and its real value and focus are still open to debate (Palley, 2007; Bellamy and Magdoff, 2009), the explanatory framework offered by this multidisciplinary analytical approach is uniquely placed to give invaluable insights into the nature and evolving relationship of real production and financial profit.

2.1 Systemic Approaches to Financialisation

One of the two main approaches to the study of financialisation regards this phenomenon as a systemic process. As such, the effects of this process are considered to be mainly historical and structural in nature. Systemic approaches to the study of financialisation generally focus on the rising influence of finance in the national and international economic systems over the course of the second half of the 20th century and advance the argument that the process of financialisation has led to the progressing decoupling between real production and financial profits at the national and international economic level.

Among the earliest such systemic analyses is the work of Baran and Sweezy (1966), where the process of financialisation is described as resulting from the transformation of the regimes of capitalist accumulation. This is ascribed to the fact that, in mature capitalist societies, production is unable to fully absorb new investment from established monopolies and, as a result, investment capital is induced to flood into speculative financial markets. On a similar note, Foster (2007), in his study of the correlation between financialisation and the deceleration of production investment, concludes that it is the very monopoly stage of capitalism, as described by Baran and Sweezy (1966), which is responsible for creating demand for novel financial products. In fact, he later goes on to claim that, at such an advanced stage of capitalism, economic activity might altogether be shifting from real production to finance (Foster, 2008). Other notable systemic accounts are found in Lapavitas (2010), who describes the general increase in financial profits as the outcome of the expropriation of workers' income on the circulation sphere, and in Fine (2009c), who, in disagreement with the latter, points to the wider structural transformations triggered by the growth of interest-bearing capital throughout the institutional structures of the capitalist system. In Fine's view, in particular, the rise of financial profits is understood as resulting from both the expropriation of earnings and the exploitation of production sites.

Other authors, such as Paulani (1991; 2009) and Teixeira (2007), have cautioned that any attempt to define the process of financialisation in systemic terms is dependent on the prior definition of 'capital'. This is because the concept of self-expanding capital fails to incorporate the crucial character of capital as an abstract, centrifugal form from

which its own content tends to escape. In other words, capital is more than self-expanding in character, as it tends to become *autonomised* in its social form. Therefore, in the Marxian understanding of financialisation, the *autonomisation* of capital should be approached as the natural inclination of the social forms of the capitalist system to detach themselves from their own base.

On the idea of falling profit rates, Ernest Mandel (1977; 1978) makes a strong argument that fiscal policies, insofar as they shift workforce from the unemployed to the employed pool, may help more in the short term than in the long one, in that they actually diminish the ability of the system to allocate the unemployed in *'profitable productive investments, and governments are led to choose policies which postpone or mask the consequent decline in the rate of profit'* (Strange, 1997).

Bob Rowthorn (1980) makes a similar argument to Ernest Mandel; however, his approach differs in two important respects. In opposition to Mandel, he argues that the crisis of the 1980s was an inevitable consequence of the flawed structure of the capitalist system, whereby overproduction leads to redistribution and social deconstruction. Secondly, Rowthorn also incorporates the idea of banking, and especially the operation and regulation thereof (Rowthorn, 1980). In approaching the crisis from a more political perspective, he puts forward the idea that *'the imposition of credit restrictions and the adoption of monetary targets caused the rate of profit to fall and this in turn led to a generalized world recession. The system […] destroyed faith in the market by rewarding the strong at the expense of the weak*' (Rowthron in Strange, 1997).

This approach is very similar to the one adopted by Samir Amin (1980), who focuses on the relationship between international capital, national governments and developing countries. He illustrates how the costs of borrowed capital, technology, and falling profit rates shift from multinationals and national governments to developing nations as a consequence of cheap labour and primary goods trade. By contrast, Ricardo Parboni (1980) concentrates on the role of the international monetary system and argues that

currency policies played a major role in isolating the United States from the worst effects of the world depression until 1979.

An important addition to the systemic debate on financialisation is Giovanni Arrighi, who maintains, in his discussion of Marx's general formula of capital, that commodity growth, when achieved by investing money into production, eventually leads to money growth as money breaks away from commodity production (1994). This way, Arrighi effectively introduces the world systems approach to the study of financialisation, by arguing that the financial and money flows flourish when real production stagnates. More specifically, the systemic cycle of accumulation implies an over-accumulation of capital that results in financial expansion, as investments in production growth are not as efficient as investments in the financial sphere (Arrighi, 1994: 8). Arrighi places financialisation within a cyclical framework of the international economy, where hegemonic capitalist formations evolve and succeed each other in a cyclical pattern. According to Arrighi, financialisation corresponds to the autumn of the hegemonic power's lifetime, as the financial sector takes over the productive one (Lapavitsas, 2009). Arrighi (1994) and Kevin Phillips (1993; 1994) proposed that financialisation, as a political-economic term, can be used to refer to the '*"prolonged split between the divergent real and financial economies" and the defining moment of international hegemonic transition'* (Arrighi, in Nesvetailova, 2012).

According to this approach, financialisation is the outcome of the over-accumulation of the current capital regime (Arrighi, 2004: 536); as such, it facilitates the movement and extensive relocation of capital across geographical spaces, in such a way as to allow for the creation of bubbles in some places and production-focused investment in others. The globalisation of the financial markets and the resulting commodification of money have precipitated a global de-industrialisation trend; it has also intensified the social cleavages created by money, being as it is unencumbered by physical, fiscal, or economic barriers. The rules imposed by the globalisation of the financial and money markets have engendered new processes of diversification in contemporary societies under the pressure of international competitive interests and the 'ubiquitous money fetish' (Altvater, 1997). Commenting on this point, Palley (2007) adds that income and

wealth inequalities are, in fact, a predictable result of the process of financialisation, insofar as the latter entails a disconnection between productivity growth and wages.

On a similar note, David Harvey (1982) argues that financial geography is key to understanding the way capital tends to elude crises by moving into new spatial and institutional locations and causing, in its wake, new strands of capital to collide, collude, or compete. A notable financial-geographical approach to financialisation is offered by Pike and Pollard (2010) who argue that the process of financialisation is *'broadening and deepening the array of agents, relations, and sites that require consideration in economic geography and is generating tensions between territorial and relational spatialities of geographic differentiation'*. This conceptualisation is based on the idea that the relational space between these actors has evolved in tandem with the development of the new social networks and patterns of actor interaction. It is this form of geographical evolution that, in turn, changes the allocation of economic resources and the shape of the economic landscape to accommodate the new financial practices.

This geographical approach engages with the growing social, spatial, and political reach of financialisation (Leyshon and Thrift 2007) in relation to three main concepts: increased risk, uncertainty, and volatility (Pike and Pollard, 2010). Its main contribution, however, is the idea that the rise of financial profits and activities is not just the outcome of structural changes at the domestic economic level, but also a result of the uneven evolution of capitalism at the international level (Christophers, 2011).

Other authors have employed ideas that only later came to fall under the rubric of financialisation. Most of them attempted to highlight the growing influence of capital-market over bank-based financial systems. Years before the concept of financialisation was introduced, Hilferding used similar concepts to describe the reallocation of political and economic powers in the social class structures. More specifically, Hilferding (1910) argued that the rise of financial capital is responsible for the transformation of the modern capitalist system on the grounds that the industrial and banking capital increased its dependence on financial investment and that the financial sector, in turn, restructured the economy to its own advantage. The interconnection of finance and

industry is explained in terms of interlocking appointments, exchange of information, and joint decision-making, made possible by the fact that financial and industrial capital share common interests in the profitability of their financial endeavours.

Hilferding also studied the idea of imperialism as an economic rather than a political process, and related this to the idea that large monopolies have a propensity to depend on bank and financial capital. In his view, this form of economic imperialism was directly responsible for the introduction of trade barriers, export of capital, and militarism. In fact, Lenin was adopting Hilferding's main ideas when he proposed the definitive Marxist theory of imperialism based on the concept of 'parasitical rentiers' (Lapavitsas, 2009). Even though Hilferdings' approach is considered out-dated and overly centred on the Austrian and German economies, his ideas have formed the theoretical basis of a large part of the literature on financialisation (Lapavitsas, 2009).

More recently, Smart and Lee (2003) have conceptualised financialisation as a political process that acts by shaping and reshaping the relationship among the actors and collectives that operate within the structure of the international economic system. They suggest that financialisation contributes to the shift of resources by reshaping social relations on a variety of different levels, from production and consumption to state and society (Harvey, 2003; Bellamy and Magdoff, 2009). In other words, this analytical approach to the study of financialisation, unlike those based on the idea of over-accumulation, requires in-depth analysis of the everyday, strategic terrain in which financial activities take place (Lapavitsas, 2009).

Other authors note the increasing importance of 'shareholder value' in the mode of modern Western capitalism, whereby firms tend to develop an increased preference for financially driven short-term profitability at the expense of investment and real production growth. These studies focus on firms as *'the key agents of adjustment […] whose activities aggregate into overall levels of economic performance'* (Hall and Soskice, 2001: 6). This view, for example, is corroborated by the findings of a study by Lazonick and O'Sullivan (2000) who report a strong connection linking the rise of neoliberal regimes with the rise of shareholder value and the downscaling of firms.

Similarly, political economists approach the yawning gap between financial profits and real-production profits as the decoupling of the financial economy from the real economy. This decoupling is argued to be due to the fact that, as with financialisation proper, *'profits accrue primarily through financial channels rather than through trade and commodity production'* (Krippner, 2005: 174) and that, consequently, many firms are compelled to intensify their financial operations in order to maximise their profits (Boltanski and Chiapello, 1999: 367; Crotty, 2005; Epstein, 2005: 7; Krippner, 2005). It is well known, for example, that a large proportion of Ford's and GM's profits derive from their financial activities, notably through captive finance (Froud et al., 1998; 2002). Building on Arrighi, Krippner (2005) has argued that firm revenues can in fact be used as a reliable indicator of financial expansion, a practise that has come to be known as 'short-term performance obsession' (Rappaport, 2005).

For all their different takes on the causes and nature of financialisation, all systemic approaches can be argued to centre on the dimension of society and on the structural consequences of the rise of financial profits. Here, they all identify a gap between the traditional value-production processes of real production and financial profit creation. The structural changes caused by the process of financialisation are considered to be spatial, institutional, and societal. Finally, all systemic approaches tend to consider the shift from real production value to financial profit creation responsible for the creation of new dynamics at the national and international level.

These approaches to financialisation, however, are limited by their level of generality. Most such accounts are typically long on the dynamics and effects of the gap between real production value and financial profits at the national and international levels, but short on the actual mechanism of said relationship. The decoupling between the rise of financial volume creation and real production is generally assumed to generate two autonomous entities, driven by different elites and dynamics. In turn – the argument goes – these new elites and dynamics change the national and international status quo in terms of value creation, balance of power, and societal geographies. Robust as these arguments might be, the nature and corollaries of the relationship between the financial and the real production level is left unexplored. Here is where the second type of

approach to the study of financialisation enters the jousts. Institutional approaches turn the analytical spotlight on the continuities and discontinuities that underpin the relationship between these two dimensions of the financialisation process.

2.2 Institutional Approaches to Financialisation

In the institutional approaches to the study of financialisation, the nature of decoupling of real production from financial profit takes a back seat to the study of the embedded relationship between these two entities as well as the actors, agents, and signs of financialisation. The main point of departure of this type of approach is that the term financialisation is conceived as expressing the engagement of non-financial market in the financial sector. In the context of the evolution of the capitalist system, this is viewed as the connecting thread that runs through the real economy, finance, and society (Nesvetailova, 2012).

The French Regulation School takes pride of place in this particular analytical tradition. Its contribution on the question of financialisation owes much to the works of Robert Cox (1987) and Susan Strange (1994), who grappled directed with the issue of the decoupling of finance from real production. Their arguments are based on the ideas of the institutionalization of finance and social organisation. Suzan Stange (1997) suggested that the rise of financial instruments observed over the past decades had institutionalized the financial sphere to such an extent that it was able to disengage from the real economy and to create profits without production. Cox (1987), on the other hand, maintained that finance is central to understanding the status of the world order and that access to finance is an expression of collective social action as well as a statement of actors' material capabilities.

For the Regulation School, the accumulation regime is as important as the mode of regulation in the system. According to Elam (1994), one of the most notable writers of

this school, the main advantage of the Regulation School is that it attempts to overcome the limitations of traditional mechanical approaches to the capitalist system. Instead of focusing on the idea of value, Regulationists shifted their analysis to the various social forms of capital and the influence of institutions. Aglietta (1979) and Lipietz (1986a), the creators of this theoretical tradition, claimed that the Regulation school has the merit of explaining *'the paradox in capitalist development between the inherent tendency towards instability and crisis, and its ability to stabilise for periods around a set of institutions, norms and rules that secure periods of economic stability'* (Webb, 1998).

In this sense, the Regulation School proceeds from an analytical perspective that is more endogenous to the capitalist system, in that it focuses on the institutions that have the power to influence it, and therefore on why, rather than how, capitalism operates the way it does at any point in time. Their argument is based on the idea that regulation is a requirement for the stabilisation of an ever volatile and fragile capitalist system; consequently, the social and political struggles of capitalist societies are responsible for the development of the necessary regulatory institutions. In addition, it claims that capitalism, just as society and politics, evolves over time and thus require new institutions to develop in tandem in order to manage and sustain each phase of what they refer to as 'capital accumulation'.

It follows that each capitalist phase is uniquely identifiable by the type of regulatory institution and capital accumulation active at that particular point in time. Attempting a more sophisticated understanding of the term, Lipietz defines capital accumulation as *'the parallel development over a long period of the conditions of production, such as the degree of mechanisation, and the productivity of labour'*, plus the social use of production through government expenditure and consumer spending (Lipietz, 1992: 2).

According to the Regulation School, financialisation is a dual process that involves both a shift in financial investment by non-financial institutions and a change in the overall macroeconomy. In this approach, the growth of finance is comparable to Fordism, in that both represent historical phases of expansion of the capitalist system, supported by their respective institutional forms (Amable, 2001; Basel, 2001) as well as by

accumulation and regulation regimes (Boyer, 2000a; Aglietta and Breton, 2001). Unlike previous phases, however, the latest evolution is argued to result from the so-called 'dynamic' process of financialisation (MacLeod, 1997a). In this regard, Aglietta (1979) points to the evolution of corporate governance and the finance regime to demonstrate, for example, the increasingly important role of banks in the era of financial liberalisation. Just as importantly, this approach shows that, while financial markets operate under the logic of homogenisation, the value of firms is not only dependent on share prices, but also highly leveraged, which creates a mismatch between productivity increases and aggregate demand.

From a more traditional institutional perspective, Froud et al. (2000) conceptualise the shift in corporate strategy and governance as a consequence of the rise of the shareholder value in the 1980s. In their words, *'financialisation does connote important real changes, but is not immanent, economy wide principle and is not a coherent, realizable project for management'* (Froud et al., 2000: 104). This claim is in plain contradiction with the Regulation School, insofar as it precedes from the argument that financialisation, much as it may aid macroeconomic performance, cannot induce a convergence of corporate and economic growth. In this view, the emergence of a whole range of individual investors is no guarantee of institutional concurrency between the reforms shaped by corporate management and the reforms required by the capital markets (Froud et al., 2000: 106).

At the macroeconomic level, most of the studies converge on the point that the process of financialisation can be defined as a finance-driven growth regime. Few of them, however, pay much attention to the institutional channels that capture the sometime contradictory effects of this process (Stockhammer, 2007). On the one hand, financialisation is generally assumed to decelerate the levels of accumulation (Van Treeck and Hein, 2007), but, at the same time, increased financial profitability is also often viewed as a driver of higher investment levels (Bhaduri and Marglin, 1990). On the other hand, financialisation is understood to increase consumption levels due to real consumption, real or financial wealth (Bhaduri et al., 1996; Boyer, 2000a; Maki and Palumbo, 2001), increased financial credit availability, and increased dividend revenues

(Cordonnier 2006). At the same time, however, the deceleration of real production is argued to lead to a reduction of total wages and, consequently, of consumption levels.

Another prominent institutional approach, made even more prominent in the wake of the rise of neoliberalism, is Post-Keynesianism. This approach centres the study of financialisation on the concept of rentiers, and especially the role of moneylenders in this capacity. Most authors associated with this school, including Crotty (1990), Pollin (2007), and Epstein (2005), seem to betray a broad Marxist slant in their claims about the negative impact of rentiers on the health of the real economy.

In particular, Crotty (2009b), along with Stockhammer (2004a) and Orhangazi (2008a), argues that the existence of the rentier inevitably reduces the level of profits available for investment and, therefore, the profits of industrial capitalist actors. From a Post-Keynesian perspective, the emergence of financialisation has created imbalances in the levels of real economic performance and investment that can only be redressed with some form of government intervention. This may come in the form of regulations on credit, financial investments, risky market involvements, and liquidity levels in the system as well as in bank reserves (Crotty and Epstein, 2009; Crotty, 2009b). In the Post-Keynesian view, this interactive kind of corrective government policy is seen as a necessary response to the central, and mostly pernicious, role that rentiers – be they speculators, price manipulators, or risk-inclined actors – play in the process of financialisation.

The process of financialisation proper, on the other hand, is described in terms of the '*increasing importance of financial markets, financial motives, financial institutions, and financial elites in the operation of the economy and its governing institutions, both at the national and international level'* (Epstein, 2005: 1). In this definition, Epstein incorporates not only the institutional and systemic dimensions at both the domestic and the international level, but also evolving relationships within society itself. Here, financialisation is identified as a process that introduces new financial motives and actors and intensifies the role of existing financial markets, while transforming the institutions of the current regime to suit them (Epstein, 2005; Lapavitsas, 2009; Lee et

al., 2009,). Epstein (2005) also adds that, as financial investments take over real production investments, the overall weight of financial activities in the system increases accordingly, in line with what Stockhammer (2004b) identified as the growing primacy of shareholders' interest in firms.

Ben Fine (2009c) takes a step further from Epstein with a more inclusive Post-Keynesian description of financialisation. In his reconstruction, the process of financialisation is the end result of six distinct, but interrelated, developments that unfolded over the course of the past four decades. These are (1) the growth and spread of financial markets; (2) the rapid development of speculative assets and products; (3) the simultaneous stagnation of real economic investment levels; (4) the development and increasing popularity of financial instruments and services; (5) the progressive loss of power of the industrial sector; and (6) the rising influence of finance. Additionally, Fine (2009) highlights the important role of financialisation as a process of debt-fuel consumption as well as of wealth redistribution and elite restructuring to the advantage of the international rentier class.

From the above overview of the literature of the institutional approach to the study of financialisation, it is apparent that, compared to the historical and structural approach, this perspective places considerable more emphasis on the internal mechanism and direct effects of the relationship between real production and financial profit. In doing so, they produce valuable insights on the nature of this relationship and, in particular, draw long overdue attention to the underlying factors embedded therein, such as the ideas of regulation and shareholder value.

For the purposes of this thesis, however, the institutional approach is just as inadequate as the systemic one. This is because this approach focuses far more on the practical than on the notional aspect of financialisation and, as such, neglects the more strictly social and structural dynamics of the process. Here lies the great mismatch between the systemic and institutional approaches: whereas the former finds that real economic production and financial profit are effectively separate entities, the latter, in contrast, arrives at their fundamental embeddedness. The following discussion gets to grips with

these theoretical incongruities by testing the explanatory power of both approaches on the specific case of the financialisation of the oil market.

3 Finance and the Oil Market

Not unlike the related notion of globalisation, the concept of financialisation escapes narrow definitions. As discussed above, any attempt to capture its processes and effects is bound to capsize on either the descriptive or the analytical side. Therefore, financialisation, as a process, can only be accurately approached as a set of transformations, rather than a single evolution (Casey, 2011). Conceiving financialisation as a set of transformations within the global economic and financial systems will make it possible to capture the underlying dynamics of its evolution on both the systemic and the institutional level.

In order to examine both the systemic and the institutional dimension of the process of financialisation in the context of the oil market, this thesis adopts a two-pillar approach. This approach comprises analytical tools from both the institutional and the systemic approaches to financialisation. This double approach is made necessary by the complex reality of the process of financialisation on the ground, determined in large part by the performative cycle between financial facades and underlying real economic markets and by the continual transformative impact of changes in technologies and regulations.

The institutional approach, in particular, has the merit of showing the extent to which oil-based financial markets are embedded in the underlying oil commodity market. This link is contingent on the performance of the underlying market insofar as financial actors form their expectations, and therefore investment choices, on the basis of real economic performance indicators (Platts Energy Risk Conference, 2012). Nevertheless, this link is dual in nature, because the performance of oil-based financial products determines, in its turn, the performance of the underlying market. This circular cause-and-effect pattern is due to the fact that physical markets view the performance of commodity derivatives as the most reliable price forecast for their evaluations and investment decisions (Platts Energy Risk Conference, 2012; Platts LNG Forum, 2012).

The emergence of this performative cycle, as part of the process of financialisation, is a pivotal point of departure for the argument developed in this thesis. Indeed, this development is responsible for the transformation of the structure of the underlying commodity markets, in view of the fact that it has introduced a new group of actors in the market mechanism of price determination.

In order to trace the process of financialisation within the structure of a particular market, such as that of oil, it is necessary to first reconstruct its main determiners and distinctive features. Financial markets initially blossom in the wake of deregulatory policies and other investment opportunities that encourage the participation of financial actors and the subsequent creation of financial products. This, in turn, marks the emergence of a new group of actors in the market. The interests that drive this group of actors are purely financial, and are based on the performance of the market rather than the underlying commodity that is traded. This aspect is central to the process of financialisation. In addition, the flexibility of the new group of financial actors, in terms of their ability to enter or leave the market at will, translates into increased volatility in the market price level. Specifically, the price level inflates at times of positive expectations, as financial funds enter the market, and deflates at times of negative expectations, as financial capital flees the market. Not surprisingly, owing to the short-term – and, hence, often shortsighted – nature of most investment strategies, high volatility soon becomes a common, if not standard, feature of the market price level (Platts LNG Forum, 2012; Thompson Reuters Energy Analyst Conference, 2012).

The argument of this thesis proceeds from the idea that the process of financialisation has paved the way for the participation, and growing influence, of financial actors and structures in markets where they were previously either absent or merely peripheral. The ensuing structural transformations can take the form of new institutions, new regulations, or even new parallel markets based on the real commodity. The actors responsible for this transformation are either pre-existing market participants, who choose to engage into, or increase, their financial operations to maximise profits or hedge risks, or actors previously unrelated to the market, who are attracted by its novel financial dimension. A further round of transformation occurs as these markets become

increasingly vulnerable the norms and institutions that the new actors impose, on the basis of their behaviour and motives, on the original structure of the market.

The transformative impact of the process of financialisation can be readily captured by the two-pillar approach developed in this thesis. This approach analyses, first, the behaviour and expectations of the financial actors and, secondly, the performance of both the real and the financial dimensions of the oil market. Owing to the particular institutional and socio-economic makeup of this particular market, both analyses are conducted against the background of the changes in regulations and technologies that conditioned the extent and effects of its process of financialisation.

The following chapters will dissect the processes and dynamics of the international oil market in order to find whether, and to what extent, this particular market has undergone a process of financialisation. This analysis will investigate the behaviour of financial actors in the international oil market and explore how the evolution of financial practises has shaped its performance and functions.

3.1 Economic Fundamentals

The performance and behaviour of financial markets and actors must first be analysed in the context of their underlying economic environment. As the process of financialisation entails the decoupling of the financial economy from the real economy, the study of financialisation must proceed from the study of the relationship between these two entities. Generally speaking, the link between stock markets and macroeconomic indicators has long been the object of extensive theoretical debates. This question is of particular interest to both the field of finance, in its quest to predict future stock market trends, and the field of macroeconomics, in its attempt to understand how the economy affects and is affected by the stock market.

Many studies have attempted to identify the link between stock prices and economic activity. A paper published by Fama and French (1989) suggests that forecast price

returns are strongly linked to the business cycles, as higher returns are expected in bad economic times and lower returns in good ones. Additionally, they find that bad economic times make households more risk averse, while good economic times more risk tolerant, which – they conclude – leads to higher inflation in good times as higher risk premiums lead to higher profits.

Other studies, including Estrella and Hardouvelis (1991) and Ang, Piazzesi and Wei (2004), have discovered that a number of macroeconomic variables usually used to predict future stock returns can just as effectively be used to forecast the levels of economic activity. These variables include the ratio of investment to capital (Cochrane, 1991a); the ratio of dividend to earnings (Lamont, in Cochrane, 1991b); investment plans rates (ibid.); the ratio of labour income to total income (Menzly et al., 2004); the ratio of housing to total consumption (Piazzesi et al., 2004); the 'output gap' formed from the Federal Reserve capacity index (Cooper and Priestley, 2005); and the ratio of consumption to wealth (Lettau and Ludvigson, 2001). The most reliable indicators are considered to be the ratio of investment to capital and the ratio of consumption to wealth, as they are based on the idea that both firms and individuals will invest more when expected returns are low (Cochrane, 2006).

With regards to the link between levels of investment and stock returns, Lamont (2000) found that investments react with a lag to changes in stock prices, as investment decisions take some time to get planned, approved, and acted upon. Consequently, he opts for the investment plans indicator, and observes that their levels react almost instantly to changes in stock prices. Using investment theory to explain asset price anomalies, Zhang (2004), in contrast, finds that firms with low expected returns to capital tend to invest more and to increase their exposure by selling more stocks, while firms with high expected returns tend to repurchase their own stock. Merz and Yashiv (2005), on the other hand, study the possibility of a better fit on the investment to capital model when labour costs are included. Their results confirm that labour flow, and specifically the interaction between labour and investment, correlates well with stock market performance.

Taking a different approach, Barrell and Davies (2004) employ a vector-error correlation mechanism to study the links between real equity prices, real interest rates, and government surplus levels as a percentage of Gross Domestic Product (GDP). Their findings show that in both the European countries they tested, as well as in the US, there is a strong correlation between these variables. However, they conclude that the output levels of market-based economies are significantly more dependent on real equity prices, while real interest rates are universally negatively related to both output and equity prices (Barrell and Davies, 2004). In a similar study, Pesaran et al. (2004) focus on the links between domestic equity prices and levels of GDP in a sample of 25 countries and find a strong, if variable, correlation.

In attempting to answer the question of whether and how the financial market is linked to the macroeconomic performance, these studies prove that certain macroeconomic indicators are indeed strongly affected by the behaviour of equity prices, especially inflation rates, interest rates, investment levels, and output. The question remains open, however, on exactly what kind of links and mechanisms exist between macroeconomic and financial performance, and just how they can be applied to the study of financialisation.

Part of the answer to this question can be found in the theory of performativity. Coming from a more sociological perspective, this theory offers an analytical framework for the study of actor behaviour and can therefore be adopted into a political-economy perspective on the role of expectations and the performance of fundamental indicators.

The concept of performativity can be approached from two different theoretical fronts. From a strictly semantic perspective, performativity is related to the meaning of the word ‘performance’ and, as such, refers to the special quality of ‘doing’ – that is, the very act of making things happen, as opposed to contemplating, observing, declaring, or representing them. In this view, language, discourse, and any other type of expression are performative if and when they represent a real-life action that exists in its very performance. In the words of Judith Butler, the cultural theorist, performativity is the ability of something to be performative, i.e. to create itself in the process of being

expressed. In her *Gender Trouble* (1990), for example, she uses the notion of gender to present a paradigmatic definition of the meaning of performativity, *'There is no gender identity behind the expressions of gender […] identity is performatively constituted by the very "expressions" that are said to be its results'* (Butler, 1990: 25).

The second theoretical front defines the concept of performativity from an economic and sociological perspective. Performativity is used to conceptualise economics as the science that expresses the functions, behaviour, and workings of the economic system and, therefore, as a discipline that performatively constitutes its own performance (Callon, 1998a). More specifically, Callon argued that economics is one of those practices that *perform* markets, thereby implying that the models and theories of economics find actual use in economic practice. Callon does not entertain the notion that economic theories can ever be completely disconnected from the workings of the economy itself; on the contrary, he contends that economists are actively engaged in the everyday practice of the economy, as they shift from the act of studying it to the act of performing it (Holm, 2007).

In disagreement with Callon, Daniel Miller (2002) argues that economists have not lost their theoretical vantage point but, rather, that the real economy has, itself, interjected the economists' theoretical models. In Miller's view, the concept of *homo economicus*, originally a pure figment of theoretical fiction, has gradually become reality on account of the fact that economic actors, once instilled with this particular belief, reconstituted the world around them in its image and, hence, *performed* it into reality (Holm, 2007).

> While the economic models [...] do not exist in reality, they are – increasingly – projected onto real-life economic behaviour with such force that people take them as objective, natural, thing like, and outside society, in much the same way as they think of gender, illness, death, and the laws of physics (Holm, 2007).

MacKenzie develops the economic approach to performativity even further. By drawing a distinction between the 'generic' and the 'effective' type of performativity, he contends that any theory, idea, or model, in order to be effectively, rather than

generically, performative, needs to go well beyond the observation of the economic process it was created to describe – it needs to be employed in a way to actually affect and change it (2007). He concludes that for economic theories to be performative, they must be introduced within the processes they were made to describe in such a way as to result in a variation of the functions and performance of these processes as compared to what they would have been in the absence of said theories. In his words, *'To claim the economics is performative is to argue that it does things, rather than simply describing (with greater or lesser degrees of accuracy) an external reality that is not affected by economics'* (MacKenzie, 2007).

The concept of performativity can therefore be easily related to the concepts of actors' behaviour, expectations, perceptions, and self-fulfilling prophecies. If economic performativity determines the way theories shape actors' understandings of the economy as well as the way actors, in turn, form their expectations on the basis of these understandings, then it is possible to argue that, by acting on these expectations, the actors end up shaping the economy in the image of these theories. As a result, these theories effectively become self-fulfilling – or, in the case of counter-productivity, self-destructing – prophecies.

The example of a bank run is frequently used to that effect. MacKenzie (2007), for instance, illustrates how, if rumours of liquidity problems at a bank spread through the economy, those who have their funds deposited in the bank will attempt to withdraw them because liquidity problems are expected lead to bankruptcy and, eventually, to the possible loss of funds. However, this process deepens the liquidity problems of the bank and renders it unable to action all of the required withdrawals, thereby ensuring that it will, in fact, go into bankruptcy. This is a textbook example of an economic self-fulfilling prophecy, whereby economic theory forms the basis of expectations that are, in turn, acted out in a self-fulfilling loop.

By the same token, the link between the performance of stock markets and the macroeconomy depends on the expectations of both individual investors and firms with respect, this time, to the overall economy. This is because stocks, and the market for

stocks, operate similarly to any other economic market. The price of stocks depends on the level of demand for stocks in the market, and it fluctuates along with it. The reason why demand for stocks is more volatile than in most other economic markets is that demand for products, and the willingness of people to pay the price to purchase them, depends on the level of expected utility.

In the case of stocks, however, expected utility coincides with expected profits, which in turn, as discussed above, depend on a very delicate combination of heuristics, cognitive evaluations, and subjective feelings. As a result, if the expectation of a downturn in the stock market is dismissed or overlooked by the public, then the effect of a negative change in macroeconomic performance will be smaller than if panic and loss of confidence had prevailed. By contrast, if euphoria prevails, then the expected positive effects of an upturn in the macroeconomic performance will be inflated. Although only one side of this direct relationship between stock market and macroeconomic performance is commonly acknowledged, the direction of dependency goes both ways.

Indeed, it is not as often acknowledged that individuals and firms, who both exist and operate within what is considered to be the macroeconomy, are also directly affected by the performance of the stock market. Individuals, when involved in financial markets, usually allocate a part of their savings to an investment portfolio that they expect to yield certain returns over time. Individual investors build and treat their portfolios in different ways and with a different tolerance to risk and diversifications. What is common to most of them, though, is their reaction to the stock market performing well: individuals are confident spending more, saving less, and investing either in the stock market itself or, on the general expectation of high returns, in other, unrelated markets (Fama and French, 1989). This behaviour is very closely linked to the concepts of wealth effect and money illusion (Akerlof and Shiller, 2009), as first described by Minsky and Keynes, which suggest that the performance of individuals' portfolios has a direct influence on their approach to the market because, when their investments increase in value, their confidence in their own wealth and expenses increases accordingly – and vice versa. The money illusion also refers to a psychological effect

that is closely linked to the economic education of investors, i.e. the failure to factor in the effects of inflation in their investment decisions.

As a result, positive performance leads to increasing portfolio values and, consequently, to increasing confidence, increasing spending, and increasing investment activity. This behaviour has inflationary consequences on the macroeconomic indicators (Fama and French, 1989), and usually requires corrective, viz. reflationary, monetary policy. Similarly, if the stock market is performing poorly, and stock prices are in free fall, individuals tend to feel worse off; they lose confidence and, as a result, tend to spend less and save more. Increased savings and reduced consumption create a negative environment for investment, which, again, has a noticeable impact on the macroeconomic equilibrium.

In contrast to the case of individual investors, the way firms are affected by the stock market is complicated by the fact that, in any advanced economy, most large firms, not only are themselves part of the stock market, but also trade in their own stocks. This creates two routes through which the stock market can affect the macroeconomic equilibrium. First, most firms, just like individuals, invest parts of their capital in stock markets and other financial market portfolios. This means that if the stock market is booming, their assets rise in value and firms feel confident to expand either against hostile takeovers or towards ambitious business ventures. In doing so, the growth of firms will translate into increased productivity not just for the firms themselves, but also for the whole economy. Conversely, a poor stock-market performance will diminish the value of firms' assets and make them less likely to expand and, hence, to generate macroeconomic growth. This mechanism is even more conspicuous in the case of institutions, such as banks, pension funds, and investment organisations, whose operations depend to a great extent on the performance of the stock markets as a large part of their capital goes into investments.

Another way firms reflect the link between stock markets and macroeconomic performance is through the market performance of their own stocks. When the stock price of a firm falls, so does the confidence of its shareholders. Lower prices on the

stock of a firm; mean that the value of the firm is shrinking – usually because of unforeseeable events, the introduction of a competitor, mismanagement, or just plain speculation. When the value of a stock falls, its holders will usually sell it immediately in the expectation that the prospects of the company are going to worsen. If the firm, then, wishes to increase its liquidity in order to maintain the same level of funds, it will be forced to release larger stakes of its shares. This loss of value and confidence can make firms vulnerable to hostile takeovers and, in some cases, even liquidation. Although individual cases have a negligible impact on the overall macroeconomic performance, this condition, especially when the stock market is in a particularly vulnerable state and many stock prices are falling in value, can spread to whole sectors. In that event, the effects of the contagion are felt throughout the whole economy as there is no good performer to cancel out the loss in value and the reduction in investment activity.

Similar dynamics have been observed in the performativity literature. The performative cycle shapes actors' perception and understanding of the economy and the markets, and allows them to form their expectations and behaviour within its structure, while influencing their performance through their investment decisions. Therefore, while the case for the decoupling of the financial economy from the real economy still stands, these two entities must be recognised as being heavily interdependent because financial actors form their expectations and investment decisions on the basis on the real economic indicators, but, at the same time, real economic indicators are heavily influenced by the financial markets.

Insofar as the performative cycle answers the question on the links and mechanisms underpinning the relationship between the macroeconomic and financial performance in the context of financialisation, both the financial markets and the real economy can be scaled down to the narrower analytical space of the 'financialised' market and the market performance of the underlying commodity product. More specifically, the analysis conducted so far indicates that the kind of financial actors and structures that emerge from the process of financialisation give rise to an entirely new market dynamic. Here, the market is determined more by the norms and behaviour of the new financial

actors and structures than by the laws of demand and supply that typically regulate non-financial markets, and hence become 'financialised'.

In financialised markets, the dominance of the new financial actors is due to their ability to shape the performance of the underlying market and, upon being in turn influenced by the process itself, to become themselves part of a performative cycle between their own behaviour and the price determination dynamics of the underlying market. It is suggested that the emergence of a fourth, 'financial' actor in the oil market is linked to just this type of performative cycle, particularly in view of its increasing influence in the price-setting mechanism of the oil market. As the distinctive feature of a 'financialised' market, this explanation could account for the historical process of financialisation that has left the oil market increasingly exposed and connected to international financial markets.

3.2 Behaviour and Expectations

If the new market dynamic is determined by the expectations and behaviour of the new financial actors, it remains to be seen what this behaviour entails in practice. This question is central to understanding how markets change as the process of financialisation takes root within their internal structure. The differences between the behaviour of new financial actors and that of the traditional economic actors' active in the underlying commodity market may help bring to light the distinctive evolutionary features of a market under the process of financialisation. The study of financial actors can be approached from two main theoretical perspectives: the neo-liberal Efficiency Market Theory and the Post-Keynesian theory.

Efficiency Market Theory (EMT) boasts a rich academic tradition. Among the most notable contributors to the EMT literature are Eugene Fama (1970), Milton Friedman (1980), and Paul Krugman (1993), who have approached the study of financial crises with the vocabulary of classical economics, which notoriously treats financial markets

as self-regulating and inherently efficient. There are two generations of EMT models, which reflect the various revisions and developments that have been made over time to adapt its main argument to the evolution of the financial markets.

Based on the neo-classical economic tradition, this theory assumes that financial markets are no different than any other market; they are, that is, inherently efficient. Paul Samuelson's (1963) classic take on the efficiency of the goods market is that individuals tend to spend money in order to purchase what they wish. If demand for some goods increases, their price will rise accordingly and so will production, until material resources run short and cause prices to rise even higher. On the other hand, if the availability of some goods exceeds the quantity demanded, prices will drop as suppliers hasten to sell as much of the goods as possible. As prices drop, the appeal of the goods will increase, and so will demand, until demand meets supply. In this theory, market prices need to be very volatile for the price-setting mechanism to set in and keep demand and supply in equilibrium. Not surprisingly, according to the Efficient Market Theory, asset prices are always at their optimal level, as they always reflect the true value of their investment. Last but not least, EMT, on the assumption that the financial markets bear no difference to the goods markets, also seamlessly incorporates the ideology of *laissez-faire* economics.

Uncritical belief in *laissez-faire* is one of the major flaws most frequently attributed to EMT, which is especially criticised for not entertaining the existence of irrational behaviour and for assuming that markets always operate in condition of equilibrium (Cooper, 2008). These criticisms form the basis of the second theoretical approach to the issue of financial actor behaviour, known as the Post-Keynesian tradition. Kept for decades in the shadow of the Chicago school of economics by both the academic and the financial world, this theoretical front has made a remarkable comeback in the past fifteen years. One of the merits of this theory is that it factors psychological and sociological insights into the study of economics and finance. In doing so, Post-Keynesians expose many of the long-established formulas and theories associated with classical economics as false or out-dated; most controversially, they conclude that people behave irrationally – and that markets do so, too (Sheleifer , 2002: 2).

Keynes argued that in financial markets the savings–investment nexus does not operate the same way as it does in other markets: whereas in typical markets savings affect investment levels, in financial markets it is investments that determine saving activity (Nesvetailova, 2007: 44). This is based on the assumption that when stock markets perform well, people will have an incentive to invest more than they would otherwise do. In apparent logical contradiction, however, this seems to imply that savings still do have an underlying influence over investment levels. Such apparent incongruities are not foreign to the explanatory framework of this theoretical tradition. The interrelatedness among investment, savings, and borrowing, in particular, is at the heart of Keynes' notorious paradox of thrift (Cooper, 2008: 119).

Even the ideas put forward by Minsky in the late 1970s and early 1980s became, in time, part of a certain Post-Keynesian canon (Fazzari, 1989: 103) – even though Minsky never considered himself as belonging to this theoretical school. One of his main arguments centred on the idea that, just as increased savings set in motion the whole paradox of thrift, increased borrowing produces something similar, but opposite; in other words, higher borrowing is argued to increase investment levels, and thus profits, and to lead to a vicious circle where individuals save less, but borrow and spend more. As captured in perhaps one of his most eloquent quips, *'stability creates instability'*, he believed that at good times people tend to build up unsustainable amounts of debt, and that this tends to jeopardise the stability, or the otherwise desirable status quo, of the economy.

This argument has some echoes of Veblen's concept of 'conspicuous consumption'. Introduced almost a century earlier, this referred to the idea that people always seek to better their position in their effort to *'keep up with the Joneses'* (Veblen, 1899). This activity is indeed as conspicuous and it is consumptive because progress is both ostentatious and quickly forgotten, as people, in seeking to improve their apparent status, overstretch their purchasing power and inflate the economy.

Another important Post-Keynesian contribution is Mandelbrot's demonstration that markets have memory and that their performance is influenced by their own recent

behaviour (Cooper, 2008: 150). Memory, he suggested, allows markets to re-adjust to their expected levels. This means that even though market conditions may change, actors contribute to their re-adjustment as they base their positions on their expectations as well as on the current condition of the market. This argument is clearly incompatible with EMT as it implies that market equilibrium is not determined as much by its true value, as by expectations. However, within the Post-Keynesian school, Mandelbrot's claims are pivotal. This is especially so because the market-memory argument seems to confirm the positive-feedback process first elaborated by Minsky, which similarly posits that markets tend to repeat past events in cycles as if they had a memory of their own.

The attributes of actor behaviour identified in the Post-Keynesian theoretical framework throw much light on why, at times of increased risky investments with high returns, the booming financial market becomes so appealing to economic actors in spite of its high volatility. The main reason for the limited memory span observed in investor activity, according to Gorge Cooper (2008), is to do with the main variables that investors employ to calculate the value of assets, to wit economic fundamentals, as discussed earlier in the chapter, balance sheets, and income statements. All three of these variables are heavily linked to the performance of the financial market and, hence, their bias misleads investors into a false sense of control (Cooper, 2008: 114).

This phenomenon is well known in the field of behavioural finance, and was most recently explored in Robert Shiller's *Irrational Exuberance* (2005) and Akerlof and Shiller's *Animal Spirits* (2009). Behavioural finance offers a number of arguments relative to the formation of financial actors' expectations and behaviour. Their most cited arguments are that investors often trade on 'noise', rather than fully understood and pondered information (Sheleifer, 2000); that they tend to rely on advice from both reliable and unreliable sources; that they fail to diversify their portfolios; and that they often sell well-performing stocks while holding on to underperforming ones (Sheleifer, 2000: 10). These arguments are further explored in the works of Kantona (1951), Loewenstein (2008), Shiller (Akerlof and Shiller, 2009) and Shefrin (2007), among others, and all appear to show that financial actors are seldom driven by rational calculations and incentives.

In his *Psychological Analysis of Economic Behaviour* (1951), Kantona puts in no uncertain terms that, in order for the rationality argument to hold any water, human beings must be assumed to be 'automatons' devoid of any human perception or feeling (Kantona, 1951: 6). In his view, this form of 'mechanistic psychology' has induced economic analysts to look at money and price behaviour strictly in terms of money and price, and to overlook the crucial human element therein (Kantona, 1951: 6). By contrast, he argues that economic behaviour is driven by impulses all too human, insofar as *'how we spend our money depends on fashion, salesmanship and advertising, social background and standards, considerations of prestige, insecurities and emotional conflicts'* (Kantona, 1951: 63).

In a similar vein, Loewenstein, in his *Exotic Preferences* (2008), investigates the process of investment decision-making and concludes that, because risks are conceived by investors as feelings, their outcome has a considerable influence on the future behaviour of financial actors. From a similar psychological angle, Paul Samuelson, in his *Risk and Uncertainty: A Fallacy of Large Numbers* (1963) introduces the concept of 'loss aversion' to refer to the phenomenon whereby actors behave myopically and irrationally in an attempt to minimise the risk of suffering losses (Camerer, Loewenstein and Rabin Matthew, 2004: 590). This behaviour has been linked to actors' attempts to build elaborate formulas and methods of beating the market. These forms of 'heuristics', or 'mental calculations', which usually involve the interpretation of signs, patterns, and trends, are widely used among investors in the belief that they can help to predict the future behaviour of the market (Sheleifer, 2000: 12). Heuristic techniques of this sort instil investors with irrational overconfidence and usually lead to 'noise' trading (Shefrin, 2007: 237).

Noise trading can also be explained in terms of what Robert Shiller and Gorge Akerlof call *'animal spirits'* (2009). In their study of actor behaviour, they posit that people's expectations are formed by the stories they hear. In other words, as people get involved in the markets in one way or another, they take into consideration what other people experienced in similar circumstances. Shiller and Akerlof go on to contend that investment decision-making is not only determined by purely economic or rational

factors, but also by such animalistic spirits as herding, overexcitement, fear, and panic[11]. Two eminent hedge fund managers, George Soros (2008) and Peter Lynch (1990), have described the irrational determinants of investment decision-making in similar terms. Soros, in particular, maintains that financial markets are influenced by the 'reflexivity' factor, that is, the idea the actors who influence the financial markets through their activities are themselves influenced by the very markets of which they are part, in a self-perpetuating loop that not only proves, but also intensifies the link between human behaviour and financial market performance.

In *Manias, Panics and Crushes*, Charles Kindleberger proposes a six-level scale to measure the degree of rationality in the behaviour of the financial actors (Kindleberger and Aliber, 2005: 36). On level one, actors are assumed to behave completely irrationally and to engage in 'mob psychology'[12], 'groupthink'[13], and other herding behaviour. On level two, actors are expected to behave completely rationally, but only until they inevitably and progressively slide back to the first level. On level three, different groups of actors conceive rationality in different ways; some of them behave rationally while others do not. On level four, all the market participants renounce the 'fallacy of composition' (Kindleberger and Aliber, 2005: 36) and individual actors will conceive of rationality independently from the total of the group or the rest of the market actors. On level five, the market operates under rational principles, but expectations differ on the quality and the quantity of information. Finally, level six is reserved to those financial actors who behave irrationally by either overlooking or suppressing key information as a result of misleading predicting models.

[11] Panic is defined as the abrupt and contagious spread of fear of an imminent collapse of the market and is often associated with bank runs.

[12] Mob psychology refers to the idea that people act differently as part of a crowd because they lose part of their individual identities in an instinctive effort to keep harmony within the group. As a result, they tend not to protest against actions or sentiments that they would not otherwise agree to under different circumstances.

[13] Groupthink is a psychological phenomenon that occurs within a group of people, in which the desire of members to try to minimise conflicts leads the group to consensus decision-making, without the critical evaluation of alternative ideas or viewpoints, and to isolation from outside influences.

The use of this scale helps Kindleberger to show the prevalence of mob psychology and hysteria as an occasional, but well-established, deviation from rational behaviour and, to borrow Minsky's conception of 'optimism' and 'euphoria', that optimism can very easily turn into mania (Kindleberger and Aliber, 2005: 24). The merit of Kindleberger's analysis is that it shows not just the prevalence, but also the dangers of the herding effect in financial markets.

The influence of human psychology on financial behaviour was perhaps most poetically captured by Lord Overstone, a leading British banker of the nineteenth century, who claimed that consumer sentiments follow a cycle of *'quiescence, improvement, confidence, prosperity, excitement, overtrading, convulsion, pressure, stagnation, ending again in quiescence'* (Bagehot, 1987: 273).

The Post-Keynesian literature on the link between financial market performance and actor behaviour is virtually unanimous. The behaviour of financial actors is described as irrational, because influenced by 'animal' instincts, fear of losses, overconfidence, misleading heuristics, as well as peer pressure, herding and other marks of mob psychology. Financial actors are found to be myopic in their investment strategies and to base their decision-making on expectations shaped as much by their own feelings as by the performance of the underlying economy.

Understanding the role of actors' expectations and irrationality is essential to the study of the financialisation of non-financial markets and the structural transformations that this process entails. The fact that financial actors' decision-making is so heavily swayed by such factors as herd behaviour, euphoria, panic, or other market instincts, is indicative that these actors may be less involved in understanding the underlying commodity of the market than in gratifying their own heuristic performance. It is the unpredictability and volatility of this behaviour that sets financial actors apart from traditional market actors.

In particular, even though financial actors do take into account the fundamental performance of the underlying commodity when forming their market expectations,

they are usually more shortsighted than traditional investors. Not being tied to any aspect of the market itself, save for its performance indicators, financial actors tend to be biased in favour of short-term gains because they are free to enter and leave the market to the best of their interests. This is in stark contrast to the behaviour of traditional actors who, often motivated by a genuine interest in the underlying commodity or in its profit returns, make long-term commitments and investments in the market, and do not abandon it as easily. The more elastic – and volatile –behaviour of financial actors, in contrast, allows them to enter the market when they expect it to perform well and to leave it when it shows signs of sluggishness.

This form of short-term performance heuristics makes the financial performance of the market more volatile when coupled with instances of 'mob psychology' and 'herding' (Clapp, 2009; Silvennoinen, 2009; Clapp, 2010). Volatility is also further intensified by the ease with which funds are able to enter and leave the market, which, depending on the popularity of the market in question, end up inflating its price level. In turn, these pricing pressures are transferred from the commodity-based financial market to the underlying commodity market by the performative cycle that links them together. On top of this, the underlying commodity market is also more responsive to those expectations that performatively shape events into reality. These events, which include financial and economic crises, as well as instances of general euphoria, can increase the volatility of the behaviour of financial actors even when the underlying market is unaffected.

3.3 Technology and Regulation

The analysis conducted so far on the economic fundamentals and on the behaviour and expectations of financial actors has studied the relationship between real economic production and financial profit creation and how it can be linked to the process of financialisation. This part of the chapter will look at the factors of technology and regulation and the extent to which they underpin the process of financialisation within

and without the structure of a traditional commodity market. These two factors are dual in scope; they can be either universal or market-specific, according to the number of markets targeted by the technological or regulatory developments.

Even though the level of technological advancement is equal at the international level, this is not always the case at the market-specific one. The rate at which new technologies are adopted into the structure of a given market is not always in line with the rate at which it becomes available to the public or to other markets, much as technological advancement has always a transformative impact on market structure and performance. Similarly, regulation exists at multiple levels, including the international, the national, and the market-specific one, and it, too, has the potential to influence extensively market performance, structure, and functions. The process of financialisation exposes markets to advancements in financial technologies and regulations, in addition to those specific to their traditional sector.

At the universal level, technological advances have profoundly affected the international financial sector.

> During the May 2010 flash crash, some stocks traded as low as a penny before recovering in a manic 20-minute period […] It may not take a full trading day for the markets to lose 25 percent today – it could happen in moments. And while traders knew trouble was brewing when they arrived for work on October 19, 1987, today companies can lose hundreds of millions of dollars out of nowhere (Mackenzie, Massoudi and Foley, 2012).

The introduction of radio, television, and finally the Internet have produced sweeping changes in the world of finance as instant access to information has progressively broken down the physical barriers between financial operations (Kurtzman, 1994; Guttmann, 2002). Advances in communication and information technology have also changed the structure of financial markets by giving new actors the information tools to gain market access (Kurtzman, 1994). With greater access to information, actors also gained a new level of awareness and involvement in the market. Virtual data, in

particular, has made it possible for actors to operate outside the physical and theoretical bounds of each market.

The advancement of new technologies, and their progressive adoption by the financial sector, has also led to the creation of new financial products and markets (Kurtzman, 1994; Guttman, 2002). Among the latest technological breakthroughs that have made an impact in the financial markets is the Internet; its introduction led to the electronic marketisation of financial products, with real time access to information at an international scale (Kurtzman, 1994; Guttman, 2002). This development altered the dynamics of the financial markets in substantial ways, as international funds now had the ability to collect the necessary information to gain access to these markets, which suddenly received vast new volumes of investments. However, these new investments turned out to be more flexible than regular ones; their volumes could change very rapidly and this could intensify the reaction levels of the markets in both speed and magnitude.

However, these developments are not just the result of technological advances in financial markets, and of the ease with which actors can now access and exit them. Indeed, the literature on the behaviour of financial actors, discussed earlier in the chapter, shows the pervasive role of the human element in financial decision-making; technological advances have only intensified such patterns of behaviour as herding or mob psychology. Indeed, having access to the same information has made the possibility of experiencing the same reactions all the more possible and frequent (Kantona, 1951: 296).

This information revolution is all the more relevant when considering how technological advances can affect the structure of a non-financial market in the process of financialisation. While both financial and non-financial markets are equally affected by the advancement of technology, their outcomes differ. Non-financial markets will stand to benefit from more efficient ways of production, better or faster supply and transportation routes, increased information, and faster communications; their profitability is likely to increase as a result. In contrast, in the case of the financial

markets, increased profitability is not the only outcome of technological developments; flexibility is, too.

Financial actors value the role of information and communication in their business as much as they value the freedom to abandon a deflating market for a booming one. This form of flexibility is facilitated by the development of technologies such as the Internet, because this makes it possible to create, and access, new products without physical or geographic barriers. Therefore, technological advances, in the context of financialisation, not only lead to increasing profitability, but also to increasing volumes of capital investments and to the introduction of volatility risks directly determined by actor behaviour and indirectly allowed by technological accessibility.

> Americans battle with these complex (financial) trades is being closely monitored by regulators in Canada, Australia and the EU as they too seek ways to contain volatility caused by machines. What frightens investors most of all is a sudden evaporation of liquidity, when everyone pulls back at once and there is no one to give a firm price to an investor wanting to sell (Mackenzie, Massoudi and Foley, 2012).

In this sense, the level of technology adopted into the structure of a financialised market determines the effects that the process of financialisation will have on the structure and functions of the market; it will do so by determining the level of engagement and influence of the new financial actors as well as by facilitating the creation and accessibility of financial products and markets.

Regulation, too, has the ability to determine the creation and accessibility of financial products and markets. However, in contrast to technology, regulation is reactive in scope and, as such, usually acts as a restriction to the otherwise available functions and accessibility levels. In general terms, the role of regulation is to target known problems and risks in financial or economic activities. Regulation can act at the international, national, or market-specific level, and it can target either specific actors or entire markets. The process of financialisation can be affected by regulatory developments at

any of these levels as long as the financialised market in question imports or deregulates activities within its structure.

Actor-targeting regulation refers to regulations imposed on the behaviour or activities of a specific group of actors in an attempt to minimise the risks to which they are believed to be exposed. Such regulation can take the form of minimum required liquidity reserves or even restrictions on high-risk investments. On the other hand, market-targeting regulation is designed to either prevent the creation of specific financial products or to regulate their size. Regulatory developments on either front have, therefore, the potential to affect both the creation and the accessibility of financial markets.

The deregulation of actors and markets facilitates the creation of new financial products and increases the accessibility of existing financial markets. In the case of financialised markets, regulation has a similar effect. Here, regulatory developments can pave the way for new financial products to be introduced into the financial structure and – unprecedented in these newly financialised markets – for capital to engage in them. In the absence of regulation, the financialisation process of a non-financial market would grow without any restrictions. Nevertheless, in the presence of regulation, any expansion causes instant and extensive movements of financial capital in the market that cannot be matched, at least in the short term, by the performance of the underlying market.

The role of regulation and technology in changing the structure and volume of the financial markets has an impact on the geographical reach of the financialisation effects. The creation of new markets and the deeper involvement of new financial actors within the structure of financialised markets (Rigobon, 2007; Schornick, 2009), tends to internationalise the effects of financialisation to other markets as these actors do not usually operate solely within the structure of one market, but across a multitude of markets to better hedge their risks. This creates links among the markets where these actors are most active.

Traditional non-financial markets consist of producers, consumers, and intermediary firms. The economic performance of these actors is determined by the performance of the market, as they are confined to operate within this market on account of their capacities, investments, or agreements. While the performance of their market affects them directly, any effects that their performance might have on other markets will only be indirect. By contrast, in markets undergoing financialisation, these dynamics change. The financial actors that enter the structure of the market are not as restricted by financial, physical, or geographic barriers as traditional actors are. This allows them to partake in financial activities in different markets worldwide. As a result, the performance of a single specific market will affect their financial performance directly; however, it will also indirectly affect the performance of the other international markets and economies in which these actors are based or involved (Kyle and Xiong, 2001).

With the introduction of technological advances and regulatory developments, the number of international actors with potential access to the structure of a market undergoing financialisation rises. This rise results in increasing global interconnectivity between this specific market and international financial markets. The link cuts both ways, as both the market undergoing financialisation and international financial markets are subject to the performance and preferences of the financial actors involved. The introduction of new technologies and regulations will bring about either a convergence or a disconnection of the two, depending on the nature of the underlying commodity of the financialised market. This is because some markets, such as the oil market, can be viewed as risk-hedging markets, insofar as the volumes of investments in their structure increases during financial downturns.

Understanding the role of technology and regulation in the determination of the extent and effects of the process of financialisation in a market adds important insights into the direct and indirect reach of the influence of financial actors, and of the relationship between real production and financial profits, on the performance, structure, and dynamics of a traditional non-financial market undergoing financialisation.

4 The Financialisation of the Oil Market

> Derivatives instrumentalise risk in such a way as to promote financialised accumulation, which abstracts from any linear relationship to underlying processes of real wealth creation. As such, finance proceeds on a novel footing. Under the guise of risk management, financial innovation has generated a plethora of derivative instruments which seem to simply mirror extant volatility, but in reality render volatility or variance a distinct traded asset. In turn, while justified by their ameliorative impact on uncertainty and role in optimising the capital allocation process, derivatives have profoundly altered a host of financial practices so that the financial sphere sits on top of the world economy attempting to profit despite, and indeed on the basis of, the vagaries of competition within it (Wigan, 2008).

The basic dynamics of the oil market, and its three-actor price-setting mechanism, have been very transparent up to the 1980s. On the one hand, importing countries, unlike exporting countries and the oil corporations, benefited from oil prices being as low as possible. This is because when the price of oil is high, exporting countries receive increased returns, while oil corporations receive higher profit margins. The basic interactions among the actors of the oil market are dictated by this distinction. Importing countries, mainly comprising of Western and OECD economies, possess high levels of research and technological capacities, which they use to apply pressure to the oil producers to keep price levels below the threshold that would make the development, adaptation, and use of an alternative source of energy worth their while.

That possibility is very threatening to oil-producing countries, as the development and adaptation of an effective alternative source would make demand for oil more elastic. This would prove especially harmful for the oil-producing countries, such as those in the Middle East, whose GDP levels depend heavily on oil revenues (OPEC, 2006). Foreign direct investment trends also indicate an increasing flow of investment from

oil-producing countries to Western oil-importing countries (Peeters, 2010). The economic health of oil-producing countries, therefore, has also come to depend on the good economic and financial performance of the West.

Other things being equal, oil-producing countries refrain from long-term and extensive raises in the price of oil. Throughout the years, price increases have been due to a number of different reasons, ranging from political interests to conflict-driven supply shocks and even peak-oil fears. In the case of OPEC politically driven increases, these take the form of agreed increases in the price of oil among all the members of the organisation (Fattouh, 2007). These increases are usually induced through supply restrictions, which affect the price level through the interaction of market forces and the price mechanism. When conflicts break out on oil-producing territories, on the other hand, production levels may also be affected as both oil wells and distribution networks usually suffer extensive damages, thereby reducing global supply and raising price levels (Fattouh, 2007). What is more, conflicts in many cases involve embargoes that act as an additional destabiliser of market equilibrium.

As described in previous chapters, up to the end of the 1970s, oil-price shocks could only occur if they were in some way directly related to the interaction of the triangular structure of the market and therefore affected by changes in either the demand or the supply of oil as a commodity product. However, these three market forces, and the dynamics between them, have changed dramatically since the 1980s.

The literature on the process of financialisation of commodities markets, and of the oil market in particular, is limited. Prior to the 1980s, the oil market did not have much of a financial dimension since oil-based financial products had not been introduced yet as a tradable commodity in international exchanges. This pattern remained in place even during the first decade of existence of oil-based financial products, the 1980s, as the oil commodity market was mostly used as an alternative investment market, mainly for insurance risk-hedging on the part of the market actors themselves (Medlock and Jaffe, 2009; Kerckhoffs, Os and Myriam, 2010).

At that time, the unpopularity of these products among actors outside the market, such as financial and speculative institutions, was mainly due to the physical mode of delivery that was associated with many of these products, as well with the strict regulations that prohibited a number of such institutions from engaging in commodity trading (Kerckhoffs, Os and Myriam, 2010). For the first decade after the emergence of oil-based financial products, the performance of the oil market was independent of both traditional financial markets and other commodity-based markets (Tang and Xiong, 2009); this effectively discouraged strategic speculative or hedging activities from purely financial actors. This argument is confirmed in the studies of both Erb and Harvey (2006) and Gorton and Rouwenhorst (2006) who found only limited correlations between the performance of the oil commodity markets and stock index returns.

Nevertheless, recent developments in the international financial markets, as well as in commodity markets, have stirred up greater interest in this field and have highlighted the need to bring the phenomenon of financialisation into sharper focus. The definition of financialisation employed in this thesis is that of a process of change in the nature and motives of market investment, market actors, and market operations. This thesis, therefore, will concentrate on the emergence and evolution of the different types and functions of oil-based financial investment products as well as of the different types, motives, and practices of the new financial actors responsible for such capital investments, with special regard to the technological and regulatory developments that have made the new market environment possible.

This chapter describes the emergence of the process of financialisation of the oil market in terms of its progressive integration with the financial sector in the post-1980s period. The purpose of this study is to verify whether the actual events of the period under study align with the conclusions of the theoretical understanding of financialisation. To that end, this study will approach the financialisation of the oil market by identifying three distinct periods of, respectively, low (1980–1990), early (1991–2001), and advanced (2002–08) financialisation.

The point of departure of this historical approach is 1980, the year when a group of energy and futures companies founded the International Petroleum Exchange (IPE) which went on to release the first contract for oil futures in 1981. As Mabro observes (2005), it would then take another five years for the first oil contract to employ a formula containing a spot price as a benchmark for the calculation of its price level. Even though oil had long been traded as a primary energy source, it was only after the events of the 1970s and the first oil crisis in particular, that financial institutions realised its potential as an investment opportunity. In the aftermath of the 1973 oil crisis, the oil industry explored new methods for the diversification of risk and new capital. The methods associated with foreign exchange and agricultural products not only proved to be a viable solution, but also had the advantage of promoting transparency and attracting greater liquidity.

The development of the futures market provided openly available information on the current and expected conditions of the market to all its actors, making its functions more transparent. It also equipped market participants with the knowledge and ability to hedge, or shed risk, against unexpected price fluctuations (Kerckhoffs, Os and Myriam, 2010). This proved especially beneficial to companies involved in the exploration, extraction, refining, and even marketing of oil products. In case of a drop in oil prices, producers now had the ability to counterbalance their losses in the actual oil market with the profits gained by betting on said drop. To be sure, in the opposite case, their winnings from the actual market are offset by the losses in the financial investment. However, the introduction of the futures market made it possible for producers to reduce their vulnerability to the fluctuations of the oil price level through the use of oil future positioning.

Since the launch of the first crude futures contracts in the late 1980s (IEA, 2011; EIA, 2012), the market has experienced all but continuous year-on-year growth. New products and trading tools have arisen in the meantime, notably swaps and options, and since 1999 trade of oil-commodity products became available electronically on the Internet. As far as the commodities themselves are concerned, the energy sector trades in four distinct kinds of oil product: West Texas Intermediate grade crude oil (WTI),

heating oil, gasoline, and natural gas (Tang and Xiong, 2009). Oil derivatives, on the other hand, come in all sorts of variations and combinations, yet can be generally classified in two broad groups in their exchange based form: futures and options. At the same time, when traded over the counter (CFTC, 2012), these instruments very frequently take the form of swaps (Labban, 2010; CFTC, 2012).

'Futures' are contracts whereby investors commit to buying or selling a specific volume of a commodity at a specific date in the future at a price that is determined at the initiation of the contract; the physical delivery of the product, which is required under the terms of the contract, can be avoided if the contract is sold before its expiration (CFTC, 2012, EIA, 2012). 'Options' denote contracts whereby investors purchase the right, but not obligation, to buy a specific volume of a commodity for an agreed price level, within a specified period of time. Crucially, options do not bind investors to exercise this option; they just invest in the right to exercise their right at any point within their period of validity (CFTC, 2012, EIA, 2012). This way, the exchange based market of oil based products provides the necessary tools for both long term value investment, as well as risk hedging.

Utilising these products at their base, the unregistered, over-the-counter (OTC) market in which actors who trade bilaterally instead of through official exchanges are part of, is a very active platform for trading what is commonly known as 'swaps' contracts. These instruments are commonly seen to belong with the realms of the financial market, as they do not require the physical delivery of the product. Swaps can take different forms, either imposing a trade of the difference between the floating rate of oil and the average spot price over the period of the contract (Labban, 2010), or the exchange of an asset, based on the price of an index, for a similar asset with the intention of shifting risks or even adjusting maturity lengths (CFTC, 2012). Thus, swaps offer a way to hedge risks while trading in futures and options as they are based on these products (CFTC Commitment of Traders Reports in Baker, 2009), yet avoiding the issue of product delivery, as well as going through the official exchanges where the trade will have to be registered.

From an historical perspective, the commodity markets behaved, and performed, very differently from their financial counterpart before the early 2000s. This was because the factors that came into play in the commodity market were very different from the ones associated with the financial asset markets, which were predominantly affected by risk and other such factors (Campbell and Shiller, 1988a; Campbell and Cochrane, 1999; Kyle and Xiong, 2001; Barberis and Shleifer, 2000). Although the 1990s witnessed increasing links between many financial institutions and underlying commodity markets, they were limited to strategies of portfolio diversification and risk-hedging (Tang and Xiong 2009). Investment in the commodity markets was further limited by the requirement of physical storage (Tang and Xiong, 2009) and by the so-called 'prudent investor' rule, which, in defining investments in un-hedged futures contracts of commodities as speculative activity, discouraged the participation of many large financial institutions, such as pension funds (Masters and White, 2008b). As a result, these markets remained long confined to their own circle of producers, consumers, and corporations as well as to the small class of financial actors and traditional speculators that specialised in their specific commodities (Tang and Xiong, 2009).

4.1 Indexes

In response to the need for a simplified investment option for these markets, with lower risks and no obligation of physical delivery, Goldman Sachs seized the opportunity to build an asset class based on commodities. This asset class, the S&P Goldman Sachs Commodity Index (GSCI), employed a combination of various commodity futures and options, with a significant large proportion of it reserved to oil. This meant that investors were now able to invest in oil without the problem of commodity storage thanks to the fact that these indexes operated on the value of the futures contracts with a minimum expiration period of one month, and more specifically, on the principle of 'rolling' from one contract to the next. This way, investors were exempted from taking physical possession of the commodity and their investments operated as if holding a long position on a futures contract (Silvennoinen, 2009). An additional advantage was

that the index was based on a number of different commodities, so investments also enjoyed risk diversification across all these commodity markets.

The first trades on the S&P GSCI took place in 1992, but it was not long before other indexers followed suit (Wray, 2009). The two most popular indexes, the S&P Goldman Sachs Commodity Index and the Dow Jones–AIG Commodity Index (DJ-AIG), have recently been joined by a number of smaller indexes, such as the Rogers International and the Deutsche Bank Liquid Commodity Index, which vary considerably in their specific characteristics (Tang and Xiong, 2009). All these commodity indexes function the same way as equity indexes (e.g. S&P 500) as their value is calculated from a specific basket of commodities, where each commodity differs in weight. An example of one such index is given in Figure 4, which presents a breakdown of the composition and weights of the commodities on which the Dow Jones–UBS Commodity Index is based.

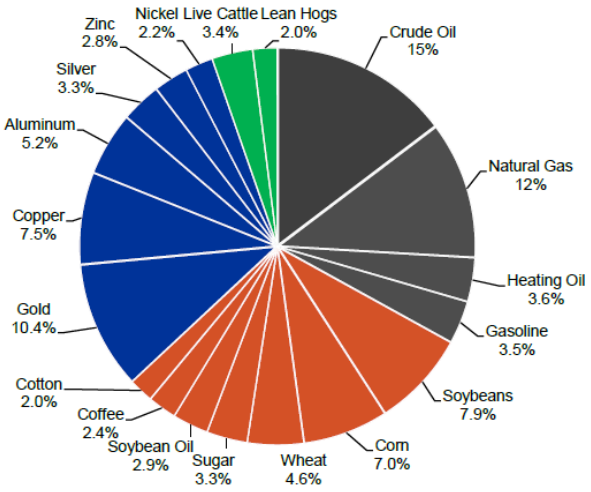


Figure 4-4 2011 Target Weights of the Dow Jones–UBS Commodity Index (S&P Dow Jones, 2012)

The commodity markets, being positively correlated to the rate of inflation, provide a very useful portfolio diversification tool compared to other financial assets. As well as being marketed as future contracts, commodities are part of the basket of goods that is used to calculate inflation rate levels; their value is, therefore, determined by the same expectations that regulate expected inflation levels (UN Trade and Development Report, 2009). Furthermore, as most commodities are traded only in US dollar values,

investments in the commodities market provide a very effective hedging strategy against the exchange rate of the US dollar (UN Trade and Development Report, 2009), while, at the same time, the value of the US dollar affects the international demand for said commodities (Clapp, 2009). The fundamental characteristics of all those oil-based financial products made accessible by the indexes marked them as effective hedging investment options. Nevertheless, the regulatory and logistical barriers of the market still made such investments either unappealing or inaccessible to many large financial institutions.

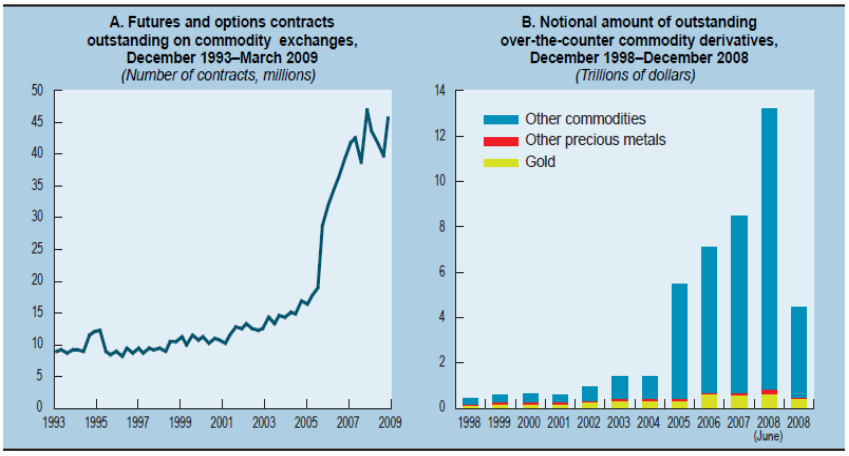
This situation changed with the equity market collapse of the early 2000s, when the negative correlation between the performances of these two markets became apparent. This led their participants to conclude that commodity markets could be used to offset the risks of asset markets. Confirmation of this came from studies conducted by Greer (2000), Gorton and Rouwenhorst (2006), and Erb and Harvey (2006) who reported a gradual increase of the negative correlation between the returns of commodity markets and asset markets since the 1990s.

More importantly, however, the Commodity Futures Modernization Act of 2000 (CFMA) changed the entrance restrictions to the market even further and made this kind of investments more attractive with partially deregulations; the market was now open to mutual funds, insurance institutions, and banks (Brown-Hruska, 2004). The CFMA, which was approved by Congress on December 2000, effectively deregulated new oil-based financial products and overruled the restrictions set by the 'prudent investor' rule. It did this by legislating that a number of over-the-counter derivatives fell outside the Commodity Futures Trade Commission [14] (CFTC) jurisdiction, thereby creating a loophole for financial actors to use their OTC expertise and sidestep the CFMA regulations (Clapp, 2010). Some of the largest investment banks, later known as 'Wall Street Refiners', established specialised departments for trading in the oil market

[14] The CFTC is an independent agency, established in 1974 by the US Congress. Its mandate is to regulate the commodity options and futures markets in the United States. This mandate is focused mainly on the promotion of open, financially sound, and competitive markets and on the protection of market actors and the public from fraud, manipulation, abusive practices, and systemic risks related to derivatives subject to the Commodity Exchange Act.

(Labban, 2010). A report by the CFTC claimed that by 2003 most of the biggest US hedge funds were engaged in commodity markets (Brown-Hruska, 2004) and that their involvement in these markets tripled between 2004 and 2007 (Domanski and Heath, 2007).

Statistical data on the involvement of the financial actors in the oil market leave no doubt as to the direction of this trend. Between 2002 and 2008, open contracts in commodity exchanges increased by 170 percent, which made the volume of exchange-traded derivatives about 25 percent bigger than the actual physical production of most traded commodities (Domanski and Heath, 2007; Redrado et al., 2009). During this time, the estimated value of commodity-related OTC contracts exchanged increased to $13 trillion, more than 14 times its starting figure (UN Trade and Development Report, 2009). According to data from the Bank of England, almost 90 percent of the oil commodity swaps and options trades take place over the counter (Campbell, 2003), which makes the official growth of this market since its inception all the more impressive. At the same time, a large volume of the oil commodity products traded is not traded individually, but as part of commodity indexes.



Source: BIS, *Quarterly Review*, June 2009.

Figure 5-4 Commodity Futures and OTC Volumes (UN Trade and Development Report, 2009)

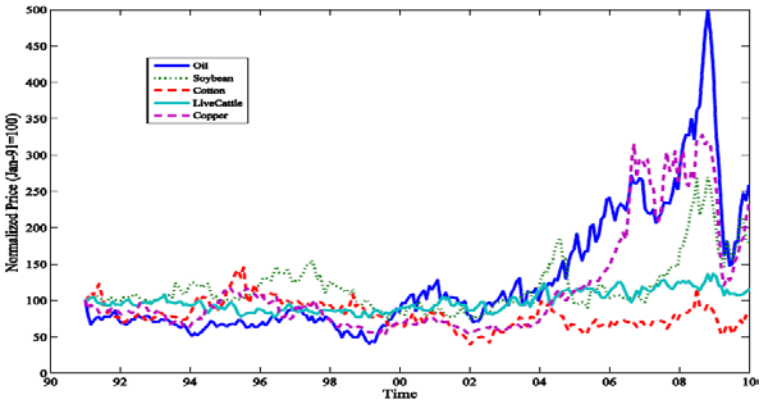


Figure 6-4 Commodity Prices, normalized prices Jan/1991= 100 (Tank and Xiong, 2009)

Figures 5 and 6 display the growth of the main commodity markets, along with the very rapid growth of the oil commodity markets since 2000. This boom was mainly determined by the addition of a wide number of large short-term focused investors, such as hedge funds, pension funds, and speculators (Clapp, 2010). The number of such institutions active in the energy market has reportedly tripled since the end of 2004, and the estimated asset value under their management is over $60 billion – a figure that does not include OTC trades, most of which go undocumented (Fusaro and Vasey, 2006). The loss of $6 billion that was announced by hedge fund Amarath in September 2006 from its gas derivatives investments is revealing of the proportions of these institutions' involvement in the energy sector (Domanski and Heath, 2007). At the same time, the US Permanent Senate Committee estimated that at least one third of the price off a barrel of oil, which by then had risen to $60, was caused by speculative futures trading.

The view that commodity index investment acted as a central driver of the 2007/8 spike in commodity futures prices is shared by a number of economists, such as Fadel Gheit[15], who in 2008 addressed US House of Representatives with the following:

> I firmly believe that the current record oil price in excess of $135 per barrel is inflated. I believe, based on supply and demand fundamentals, crude oil prices should not be above $60 per barrel […] There were no unexpected changes in industry fundamentals in the last 12 months, when crude oil prices were below

[15] Managing Director and Senior Analyst at Oppenheimer and Company, Inc.

> $65 per barrel. I cannot think of any reason that explains the run-up in crude oil price, besides excessive speculation (Gheit, 2008: 2).

Towards the end of the decade, commodity-linked exchange-traded funds (ETFs) became available to actors who wished to engage in this market while trading on stock exchanges (Clapp, 2010). The sellers of these products employed the commodity futures market in order to hedge their risks, which led to pressures for a further relaxation of commodity market regulations (Clapp, 2010). This is because the limits to the volume of positions that an institution could hold on the futures market were restricting the increasing demand for hedging against the risk of these products. In 2006, the CFTC issued *no action* letters to Deutsche Bank and Gresham Investment Manager, allowing them to increase their positions in the market and, thereby, effectively lifting the limits imposed by the regulation. A year later, the CFTC, citing the growth of commodity index trading (US Senate, 2009: 109), called for the introduction of a 'risk management' exemption to lift the limits of position for approved index funds engaged in risk-hedging strategies (Clapp, 2010).

The development of these indexes and products has attracted instruments worth billions of dollars from financial institutions interested in taking advantage of the indexification of commodity markets (Clapp, 2010). The characteristic that sets these markets apart from traditional asset markets is that their value is fundamentally connected to the supply and demand of the underlying commodity. However, these two types of market are set on a path of partial integration, as financial actors, especially investment banks and hedge funds, increasingly invest in commodity markets and, at the same time, commodity-market actors choose to partake in asset markets to diversify their portfolios. This process of integration is due to the increasing exposure of these markets to the shocks that occur within the boundaries of each other via the spill-over effects caused by the behaviour and influence of their respective actors (Tang and Xiong, 2009).

4.2 Actors

At this point, it will be useful to get a closer look at the financial actors themselves. In the period under analysis, the petroleum futures market expanded both in size and in number of participants. With privileged access to data from the Commodities Futures Trading Commission (CFTC), Büyükşahi et al. (2008) were able to demonstrate that this trend is indeed real. This evolution of the financial actors operating across both the underlying commodity and the oil-based financial markets entails an increase not only in their ranks, but also in their variety.

On the side of the oil market, a number of large International Oil Companies (IOCs), large Utility Companies, commodity trading companies, and small oil producing and storage firms are active in the asset markets mainly as a means of diversifying their portfolios or hedging their risks. National Oil Companies (NOCs) are seldom involved in these markets as they operate under government control (Interview 2, 2012). On the side of the financial institutions, on the other hand, financial actors come in the form of hedge funds, investment banks, asset management institutions, and specialist trading houses (Interview 3, 2012). Generally speaking, there are two major categories of purely financial investors: active managers and passive index managers. The first category consists mainly of hedge funds and pension funds actively engaged in the oil-based product market, while the second is more recent as it first appeared at the turn of the millennium (Tavasci and Ventimiglia, 2011) when market products and indexes had already become widely available and easily accessible.

In recent years, the investment extent of such institutions has intensified not only in volume, but also in character. This is because some of the largest financial institutions have started investing directly into the physical production of the oil commodity and its products. JP Morgan Chase and Goldman Sachs, for example, are two of the largest crude oil suppliers, and buyers of products, of the refineries owned by Alon USA California, Louisiana and Texas, as well as of the Carlyle Group PBF Energy and other New Jersey and Delaware refineries (Meyer, 2001). Large oil-product consuming companies, such as energy suppliers and distributors, as well as airlines, are also getting

increasingly involved in these markets by investing directly in refineries or storage facilities. This development, however, goes against the findings of Campbell (2003), who noted that the financial investors in the oil market, such as hedge funds, characteristically concentrate their investments on the most liquid parts of the oil futures market in order to retain the freedom to retrench as needed.

Nevertheless, this recent development can be explained by reference to two major factors. On the one hand, recent high oil prices have reduced the profit margins of the oil downstream sector; this has made investing in refineries cheaper (Interview 2, 2012). On the other hand, recently introduced regulations on commodity trading, such as the Dodd-Frank Act, have induced these institutions to find alternative ways to increase their exposure to this market (Interview 4, 2012). Along with these two main drivers, other factors also played a part, such as the security of supply and the commercial requalification of previously non-commercial institutions on the back of their successful involvement in the market. It must be noted, however, that this development began as recently as late 2011 and, as such, however deserving of further observation and analysis, it falls outside of the remit of this research.

As can be seen in Tables 1 and 2, drawn from Bassam Fattouh (2010b), financial and oil market actors have partaken in both types of markets. Table 1 presents the list of the participants in the 21-day Brent FOE market, which is a market for trading forward contracts of 600,000 barrels of Brent oil. This market is used by oil companies either for trading their crude-oil productions or for purchasing crude oils for processing (Interview 2, 2011). As illustrated in Table 1, the composition of the actors involved on the buying side of this market is dominated by a few large IOCs, such as BP, ConocoPhillips, Shell, and Total, as well as by a few large oil-trading companies, such as Trafigura and Vitol; of particular note, here, is Morgan Stanley's steady involvement since 2009. As trading of oil commodities is mostly ducted through bilateral agreements between producers and consumers, the volumes traded in this market are those of small oil producers. Requiring forward contracts to finance their productions, however, small oil producers represent only a small fraction of the kind of underlying crude-oil trading

market that takes place on the Platts platform or on other commodity trading platforms, such as Bloomberg, Ice, or Thompson Reuters Eikon.

	Sales (b/d)				Purchases (b/d)			
	2007	2008	2009	2010	2007	2008	2009	2010
Arcadia	0	0	0	0	485	0	0	0
BP	23,786	3,005	13,699	29,545	25,243	273	10,959	12,662
Chevron	0	273	274	0	0	273	0	0
ConocoPhillips	18,447	11,749	12,329	32,143	6,311	5,464	12,329	29,545
Glencore	0	0	274	0	0	546	548	0
Hess	0	0	9,315	37,338	0	0	10,137	20,779
Hetco	0	0	822	7,143	0	0	1,096	974
Mercuria	12,136	12,842	64,658	79,545	13,107	24,863	54,247	89,286
Morgan Stanley	0	0	274	28,896	0	0	3,014	19,805
Noble	0	0	548	6,494	0	0	822	5,844
Phibro	46,602	19,126	25,479	23,377	36,408	23,770	36,164	14,935
Sempra	15,534	18,306	13,151	8,766	18,447	19,672	13,699	7,792
Shell	34,951	62,022	125,205	91,883	46,117	32,787	73,151	75,000
StatoilHydro	0	273	0	0	0	0	0	0
Total	0	0	0	649	0	0	0	2,273
Totsa	31,068	16,667	53,425	62,987	61,650	28,962	108,767	83,442
Trafigura	0	0	0	16,234	0	0	0	10,714
unknown	0	273	0	0	0	273	0	0
Vitol	68,447	12,842	48,219	56,818	43,204	20,492	42,740	108,766
	252,978	**159,386**	**369,681**	**483,828**	**252,979**	**159,383**	**369,682**	**483,827**

Table 1-4 Participants in the 21-day BFOE Market and their Shares in Trading Volume (Fattouh, 2010b)

Table 2 contains a list of the major participants in crude oil futures market between 2007 and 2010. This table show a wider range of participants. On the one hand, JP Morgan, Morgan Stanley, Standard Bank, BNP Paribas, and Merrill Lynch are some of the dominant international financial institutions in crude oil futures trading. On the other hand, companies such as Chevron, Petroplus, Mitsui, Statoil, Shell, Lucoil, Hess, and BP are leading participants in the oil market, either in the upstream or downstream side, together with some of the largest oil-commodity trading companies, such as Vitol and Trafigura, which also trade large volumes of contracts. That said, two important caveats must be noted with regards to the data in this table. First, the volumes of trades reported are of Central Counter Party (CCP) trades and do not include any OTC trades in which these companies might be involved. Second, the absence of NOCs from these trade figures confirms the extent to which their trade focus – mandated by central governments rather than market incentives – remains on the underlying commodity market.

Figure 7 adds to the findings of Tables 1 and 2 with a breakdown of the major participant groupings in the futures oil market. These figures come from the UK Cabinet Office and are based on Commodity Futures Trading Commission (CFTC) data, where market participants are divided between commercial and non-commercial. The CFTC collects data from CCP trades, where traders are obligated to declare the purpose of each trade order as either commercial and hedging or non-commercial and speculative. The CFTC then makes these data publicly available. According to these data, non-commercial positions are dominated by hedge funds who account for the largest percentage since 2006, but the participation of floor brokers and traders representing smaller institutions or individual investors is also remarkable. On the commercial side, manufacturers and producers of oil, account for only a fraction of the total trades in the market. On the other hand, commodity swaps and commercial dealers take up the widest percentage of this market. However, these dealers often act as intermediaries for financial institutions who do not want to get direct exposure to oil market trading (Cabinet Office, 2008); thus, their classification as commercial trades is sometimes questionable.

	Sales (b/d)				Purchases (b/d)			
	2007	2008	2009	2010	2007	2008	2009	2010
Addax	0	0	411	0	0	0	740	812
Arcadia	23,301	4,918	4,658	14,448	6,553	10,109	6,575	17,208
Astra	0	0	0	0	2,427	1,298	0	0
BNP Paribas	0	0	548	5,519	0	0	2,192	4,221
BP	26,214	55,601	74,085	76,948	43,083	37,432	24,397	75,010
Cargill	485	1,913	411	0	485	4,918	274	1,136
Chevron	17,233	26,093	70,699	84,659	43,811	47,541	53,863	73,195
Chinaoil	0	0	0	0	0	0	1,233	0
ConocoPhillips	485	10,410	23,041	33,766	728	24,863	28,630	60,065
Glencore	1,456	1,940	14,219	24,968	485	4,372	9,863	26,299
Gunvor	0	7,240	13,151	3,571	1,942	5,464	3,836	1,299
Hess	971	273	2,192	22,240	0	0	2,192	17,532
Hetco	0	0	0	3,571	0	0	1,096	974
IPC	0	273	2,055	325	0	1,481	3,068	1,786
Iplom	0	0	548	0	0	1,093	548	1,136
Itochu	0	546	7,671	7,253	0	6,126	11,041	10,844
JP Morgan	9,223	11,380	9,153	7,792	1,456	29,358	54,973	14,935
Koch	33,010	36,284	23,556	3,247	11,165	37,205	34,849	32,305
Lukoil	971	13,798	28,559	24,513	485	7,049	20,411	21,753
Maesfield	0	0	1,644	1,136	0	0	0	1,623
Marathon Oil	0	0	0	0	11,408	9,699	548	6,494
Masefield	0	273	1,233	3,247	0	3,825	685	0
Mercuria	34,345	46,809	59,726	79,471	31,311	68,415	99,841	117,156
Merrill Lynch	1,942	4,781	1,918	1,299	7,646	4,645	0	0
Mitsubishi	0	0	0	0	0	0	3,014	0
Mitsui	0	273	0	0	1,456	546	0	0
Morgan Stanley	20,388	24,317	57,882	100,487	20,146	17,760	51,238	88,377
Murphy	0	0	0	0	0	410	0	0
Natixis	0	0	42,033	19,968	0	0	36,849	27,110
Neste	971	4,372	2,740	0	0	3,005	822	1,623
Nexen	1,942	4,577	4,003	6,951	2,427	2,691	5,189	11,685
Noble	0	0	822	14,286	0	0	548	8,442
OMV	1,485	0	14,562	28,545	0	5,787	36,995	48,880
ORL	0	1,093	0	0	0	2,186	0	0
Petraco	0	820	1,644	974	0	1,735	2,192	0
Petrodiamond	0	0	0	1,948	0	0	822	0
Petroplus	5,583	3,825	1,918	0	1,942	0	1,644	0
Phibro	20,146	48,656	68,923	82,867	36,772	52,117	34,400	50,487
Pioneer	0	0	0	0	0	0	137	0
Plains	0	2,732	0	0	0	0	2,466	1,299
Preem	0	0	685	0	0	0	3,562	0
Sempra	971	7,978	9,644	2,273	4,854	15,929	15,616	2,922
Shell	47,694	131,929	132,079	149,221	52,699	39,727	83,995	129,545
Sinochem	0	0	0	1,136	0	273	603	974
Sinopec	0	0	1,932	2,597	0	0	2,800	1,867
Socar	0	0	0	25,000	0	0	0	9,091
Sonatrach	0	0	274	974	0	0	7,260	8,279
Standard Bank	0	0	932	5,575	0	0	548	5,195
Statoil	6,796	2,186	8,630	108,224	4,369	273	8,630	118,130
StatoilHydro	14,563	77,945	59,233	0	6,796	54,781	61,863	325
Totsa	19,782	23,087	45,260	25,974	14,078	46,325	47,397	60,575
Trafigura	971	16,940	29,315	27,955	3,641	13,798	28,877	32,649
Unipec	8,738	7,377	4,521	8,955	0	12,432	29,170	11,578
Valero	1,456	546	1,096	0	9,951	14,208	19,726	54,545
Veba	0	0	0	0	0	1,093	0	0
Vitol	36,044	58,579	132,060	245,692	15,049	49,795	112,447	98,214
	339173	641772	961675	1259585	339172	641772	961674	1259585

Table 2-4 Participants in the Crude Oil Futures Market (Argus data in Fattouh, 2010b)

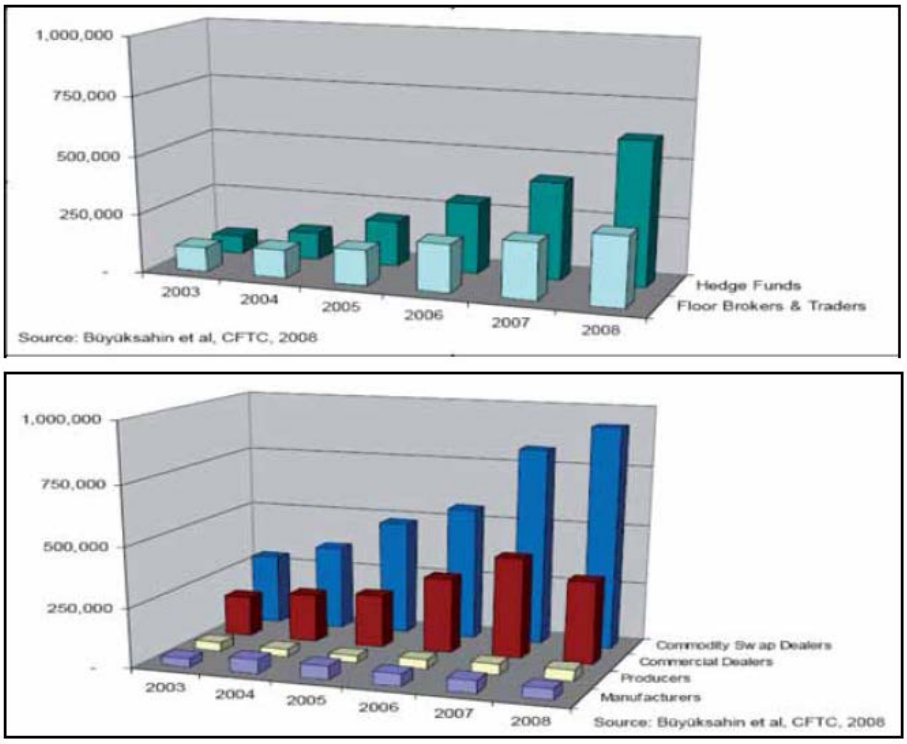


Figure 7-4 WTI Average Open Interest by non-Commercial and Commercial Participants (Büyükşahin et al., in Cabinet Office, 2008)

Masters (2008a) produces evidence that proves that by March 2008 the oil futures index had risen by a quarter of a trillion dollars. He also puts forward an argument to the effect that the distinction between commercial and non-commercial positions as published by the CFTC is wrong (Masters, 2008a; 2009b). According to the CFTC, when trade takes place within a clearing house, such as the NYMEX or the ICE of London, the trader has to mark his order, on a trade-by-trade basis, as either commercial or non-commercial, depending on the type of institution that requested it. The rationale of a clearing house is to:

- Match, guarantee, and settle all trades and register positions resulting from such trades.

- Perform mark-to-market calculations of all open positions at least once a day and oversee the resulting cash flows between clearing member firms.

- Manage the risk exposure that clearing firms present to the clearing house.

- Perform the exercise and assignment of options contracts.
- Facilitate, but not guarantee, the delivery of physical commodities.
- Permit multilateral netting of positions and settlement payments.
- Assuming contracts are fungible (interchangeable), clearing houses offset positions.
- Enable clearing members to substitute the credit and risk exposure of the clearing house for the credit and risk exposure of each other.
- Maintain a package of financial safeguards that are designed to mitigate losses in the event a clearing member defaults on its obligations to the clearing house.
- In the event of such a default, meet the obligations of the defaulter by first utilising the collateral pledged to it by the defaulter.
- If such collateral is insufficient to cover the entire amount of the defaulted amount, then utilize the components of its financial safeguards package to take care of the remaining defaulted amount.' (IEA, 2011)

This raises questions over the motives of each institution, as well as the idea that some institutions occasionally act as intermediaries, thereby diluting the ratio of commercial and non-commercial trades (Cabinet Office, 2008). While the US CFTC estimates that about 20 percent of the NYMEX oil futures trades are non-commercial, Masters (2008a; 2009b) calculates that the actual ratio of commercial to non-commercial futures is significantly higher. Nevertheless, the UK Cabinet Office report claims that the difference in investment behaviour between financial and traditional investors is traceable, and indeed comports with the known evolutionary track of market behaviour. It is claimed that traditional financial investors use oil as a hedging mechanism for their market investments (commercial positions) and that, therefore, they generally hold long

positions and are not easily affected by short-term developments in the market (Cabinet Office, 2008).

Figure 8, in addition, shows a steady, and very conspicuous, increase in the number of both commercial and non-commercial actors in the market, especially since 2000. However, the percentage increase of non-commercial positions in this period far exceeds that of commercial ones. The same trend was also announced by CDA/Wiesenberger[16], which reported that mutual funds had grown in number and assets, respectively, from 155 and $16 billion in 1959 to 10,725 and $6.9 trillion by the year 2000.

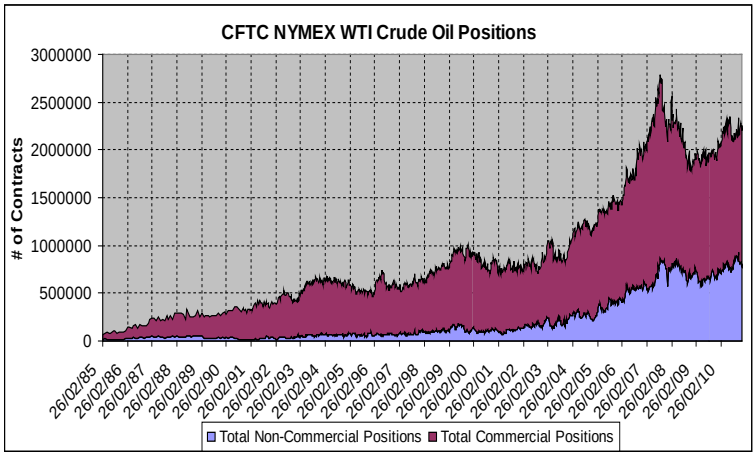


Figure 8-4 Composition of the Recorded Oil Futures NYMEX; 1 contract = 1,000 barrels (Bloomberg, 2011)

Looking more closely into the composition of non-commercial trades, Figure 9 plots them with respect to their long, short, or spread positions in the oil market. A number of conclusions can be reached from this. First, the number of non-commercial contracts has risen dramatically since the end of 2000. Second, all three of the available types of contract have increased in volume since then. Third, the spread contracts, which represent mostly speculative investments, recorded the highest increase, while long positions, which represent mostly hedging or traditional investments (CFTC, 2009b), come a close second. Even short positions, the least popular, have in fact more than

[16] Now part of Thompson Reuters, CDA/Wiesenberger is a company that provides information on transactions through computing databases.

tripled in volume since 2000. These figures suggest that the developments of 2000 led to a massive inflow of capital in the market, which then spread across all the different products available. What is more, they suggest that, even though all three types of product increased over this period, the more speculative ones enjoyed the greatest increase, which heralded the emergence of speculation-driven investment interests.

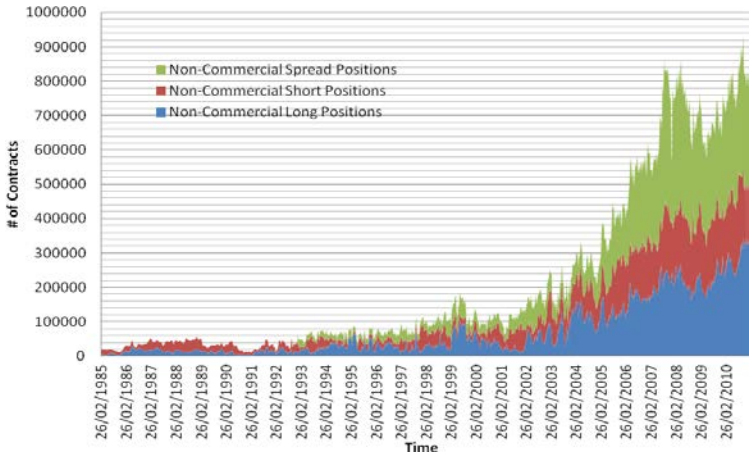


Figure 9-4 Non-Commercial Positions in WTI NYMEX Oil Futures, 1 contract = 1,000 barrels (Bloomberg, 2011)

In keeping with these findings, the CFTC (2009b) considers speculation in the oil futures market such an important aspect to the oil price-setting mechanism that has begun holding hearings on the possible limits on futures speculation in the energy market. At the same time, the UK Prime Minister Gordon Brown and the French President Nicolas Sarkozy penned a joint article in the Wall Street Journal (July 8, 2009) about the damaging effects of speculation on the global economy, calling on the International Organization of Securities Regulators to regulate the oil futures market and to examine its influence on the system of oil pricing. Interestingly, a similar call for an investigation of the effects of oil-futures speculation on oil prices was also issued by the US Senate Permanent Subcommittee in 2006 – years before the crash.

According to the UN Trade and Development Report (2009), the inflow of new investors into the oil market has multiplied instances of herd behaviour and consequently intensified the decoupling of the financial aspect of commodity markets from the dimension of real production, especially in the short term, when the demand

and supply forces of the commodity markets are particularly inelastic. This is because short-term investment shocks in the financial aspect of commodity markets have the ability to alter the price level of these oil-based financial products. On the other hand, the inelasticity of the supply and demand of the actual oil commodity can produce a mismatch between these two markets and the creation of speculative bubbles (UN Trade and Development Report, 2009).

Tang and Xiong (2009), in their study of the functions and effects of the financial aspect of the oil market, have traced an increase in the influence of world equity shocks as well as US dollar exchange-rates shocks on commodity index rates, especially in the post-2000 era. They conclude that the financialisation process has tangible effects on the commodity markets. By way of example, they compare the stronger responses received by the two biggest commodity indexes, the GSCI and the DJ-AIG, to the performance of similar, but un-indexed, commodities and, in doing so, they bring to light the spillover effects of volatility from the financial markets to the commodities markets (Silvennoinen, 2009).

This process of integration between commodity markets and asset markets can be understood by reference to different factors. First among them is the fact that a growing number of investors have begun to hold a combination of both commodities and financial assets in their portfolios. The herding effect, however, drives them to follow very similar hedging policies and to invest in very similar products; this makes them mediators of financial shocks between the two increasingly mutually vulnerable markets. Due to portfolio trading, for example, poorer performance in one market causes liquidations in the other markets in the portfolio as their traders attempt to readjust their positions (Kyle and Xiong, 2001).

Harry Markowitz's portfolio theory (Markowitz, 1952) suggests that since stock price movements are random, it is not possible for an investor to predict how to beat the market. Thus, in order to optimize their returns against risk, financial investors have to hold investments that equate to the entire market. The high risks of this sort of investment can be bypassed through a portfolio diversification strategy where the

capacity to quantify the risk–return trade-off of financial assets, along with their correlated returns shifts the risks to the centre of investment decision-making. Thus, investors evaluate assets according to their variance and co-variance of returns over time. As a result, volatility becomes a crucial determinant of the investment process insofar as returns are counterbalanced by risk tolerance (Wigan, 2008).

Furthermore, increased co-movement is observed among commodities that are only related by virtue of being part of the same commodity index and being traded in that capacity. This co-movement implies the financialisation of these commodities in correlation with the asset markets (Pindyck and Rotemberg, 1990).

> Various factors may have contributed to the large volatility increase in oil and non-energy commodities. First, the world economic recessions that accompanied the recent financial crisis made macroeconomic fundamentals more uncertain and thus commodity demand and prices more volatile. Second, the financial crisis, which initially disrupted the markets for mortgage backed securities, eroded the balance sheets of many financial institutions and eventually reduced the risk appetite of financial investors (including index investors) for seemingly unrelated assets in their portfolios, including commodities (Tang and Xiong, 2009).

Moreover, according to Pavlova and Rigobon (2008) and Schornick (2009) any deregulation or liberalisation of the markets, which normally accelerates their process of financialisation, leads to higher capital flows into commodities, which interferes with their level of correlation.

The increasing number of new participants in commodity markets can therefore be typically characterised as holding large positions and being as prone to irrational investment behaviour. Their activities have intensified the decoupling of commodity futures price levels from their fundamental value. In other words, the increasing involvement of financial institutions in commodity markets, as well as the novel ways of marketing its products, has coincided with the financialisation of these markets, insofar as they behave increasingly like asset markets.

Labban (2010) offers a performative economic theory take on this particular development. In his view, the emergence of oil as an asset market has created a financial market parallel that is uniquely integrated with its underlying commodity market. He argues that big banks and financial institutions, which had taken up high risks when first entering the underlying oil commodity market, have become themselves market makers as they started taking positions of their own in the market. Most prominently, they employed oil derivatives, originally designed to protect market actors against volatility, as part of the development and construction of a new asset class, the commodity index, that generated profits independently from the actual production of oil and thereby allowed for the rise of speculation and further volatility (Labban, 2010).

According to the definition of financialisation furnished at the outset, financialisation occurs when the emergence of new financial markets creates new processes and alters existing financial investment interests, within and outside the market structure, thereby attracting further new financial actors and institutions. The oil market seems to fit the pattern. The emergence of a new type of market via the oil futures and options market has allowed oil to be traded – and increasingly so – as a financial asset, independently from the underlying commodity traded as contracts with physical delivery (Interview 3, 2012). The very nature of this new market has attracted a vast amount of capital deriving from purely financial actors and institutions, whose motives are financial and unrelated to the underlying product linked to their trade assets.

In line with the definition of financialisation given above, the number of these new institutions and actors involved in the oil-based financial market, along with the capital injected into it, has grown rapidly, especially since 2005. What is more, the development and widespread adoption of new technologies, as described above, contributed in no small part to this market growth. When oil futures and options became available to anyone with an Internet connection, in 1999, it can safely be argued that the processes and functions of this market changed irreversibly.

The process of financialisation in the oil market has brought about a unprecedented growth in the number of actors and volume of capital active in its structure. While prior

to the 1980s and early nineties the number of financial institutions and actors involved in the oil based financial markets was restricted by regulation, accessibility, and lack of product and trade information, the developments of the late 1990s and early 2000s made access to the market possible and attracting. Institutions that had no prior involvement or knowledge of this market were rushing to find a way in (Interview 3, 2012). Masters and White (2008) measured that the value of assets allocated in commodity passive index funds had risen from US$13 billion to 260 billion within a period of five years starting from 2003. As disparate sources as a Staff Report of the US Senate Permanent Subcommittee on Investigations (2006), Masters (2008), and later and Parsons (2010) agreed that trading by speculative financial institutions in the oil market had pushed the futures prices to levels that could not be justified by rational expectations of future supply-and-demand patterns. Joachim von Braun[17] was quoted as saying that *'we have good analysis that speculation played a role in 2007 and 2008 […] Speculation did matter and it did amplify, that debate can be put to rest'* (Irwin and Sanders, 2009).

Data from Daniela Tavasci and Ventimiglia's study on the financialisation of primary commodities, summed up in Figure 10, clearly indicate that, even in a small sample of financial institutions involved in index trading, there has been an abrupt increase in the volume of capital invested in commodity futures. Her research also report that according to the Bank for International Settlements (BIS) *'the number of futures and options contracts outstanding on commodity exchanges has increased about fivefold and the notional amount of outstanding OTC commodity related contracts reached the astronomical figure of $13 trillion in 2008'* (UNCTAD, 2009a). She concludes that commodity derivatives have transformed into a proper asset class and are regarded by financial investors and traders as just another financial asset in the composition of their portfolios (Tavasci and Ventimiglia, 2011).

[17] Director of Germany's *Centre of Development Research*.

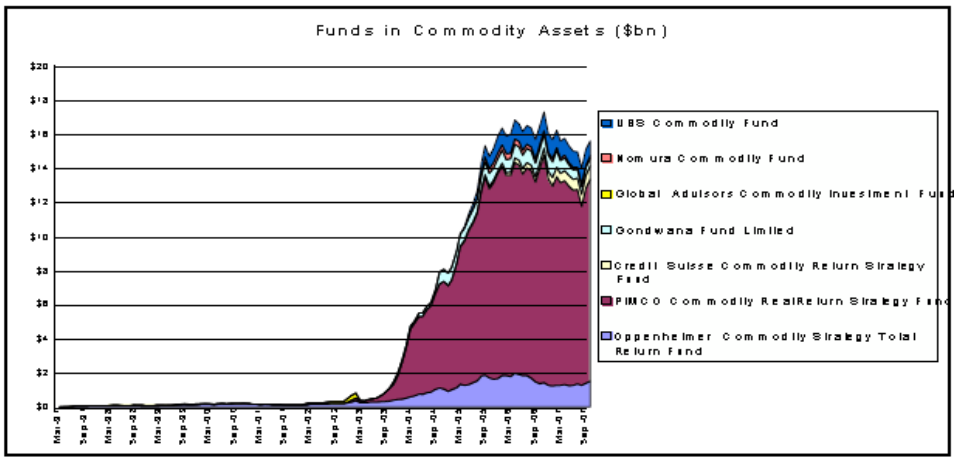


Figure 10-4 Sample of primary-commodity-derivative dedicated funds during the primary commodity boom, 1997 to 2008 (Tavasci and Ventimiglia, 2011)

Following from this, the triangular structure that had dominated the market dynamics up to the late 1970s underwent a radical transformation in the period between 1980 and 2010. The process of financialisation has opened the structure of the oil market to a new group of actors who are motivated by purely financial interests and bear no connection to the underlying commodity of the market. The spot price of oil, as a result, is no longer determined only by the interaction of producers, consumers, and mediators. This is because a fourth actor is now responsible for the lion's share of the financial capital invested into the oil market and is therefore actively involved, and increasingly influential, in the price-setting mechanism.

4.3 Performative Cycle

The relationship between oil spot prices and oil futures prices has been a subject of contention in recent years. A point of agreement in the literature, however, is the central role played by financial markets. As compellingly articulated in Kaufmann (2011), as well as in previous similar reports from the Interagency Task Force on Commodity Markets (2008) and Medlock and Jaffe (2009), the particular evolution of the financial markets over the past decades has been responsible for introducing 'speculative' factors into the price mechanism. Simply put, after the addition of financial actors to the

traditional triangular structure of the oil market, oil prices have progressively lost their correspondence to the fundamental value of the underlying market commodity.

Part of the reason for this is that the new financial actors follow different investment patters compared to traditional oil investors (Fattouh, 2010b). Financial investors generally use oil investments as a hedging mechanism in their investment portfolios and, on account of their similar access to information, knowledge, and expertise; their investment patterns are generally synchronised and easily identifiable. As they mostly hold long positions, which, in the context of the commodity futures and options markets, are indicative of an expectation that the value of the commodity will rise, they are not generally influenced by short-term fluctuations and market volatility. At the same time, they maintain a higher risk tolerance relative to traditional investors. Against this background, a UK Cabinet Office Report (2008) calculated that financial investments account for more than 30 percent of the total open contracts of the NYMEX market and have extensively shaped the pricing of this market.

Labban (2010) proposes that the financial performance of the oil products influences the performance of its spot price despite the fact that they are traded in physically separate areas. This is because the performance of financial products may be acting as a guide for oil spot market traders. However, the financial oil-product pricing is based on future expectations of the conditions in the underlying commodity market – hence the circular pattern of influence between the two entities. Labban also calls attention to the fact that financial markets frequently overreact to these expectations, especially compared to the underlying commodity markets, which, as a result of their mobility and liquidity, allow the speculative effects of financial overreactions to penetrate the core of their relationship. In a rather carefully formulated passage, Labban notes that

> The spot price is driven by speculation on conditions in spot markets mediated by the reaction of financial markets to such speculation […] fundamentals […] determine oil prices only by way of the effects on financial markets of speculation on future conditions in spot markets (Labban, 2010).

Primary research conducted for the purposes of this thesis shows that Platts, currently the dominant international data provider of physical commodity price reporting, proceeds from this very understanding of the impact of financial markets on the oil price-setting mechanism. Platts supplies real-time data and reporting to the majority of the international oil-market actors, from the *majors* to independent oil producers, refiners, traders, and even news agencies specialised in oil-market reporting. Their data are considered the most accurate and reliable source in the market, and are thus employed for the drawing of reports or as a way to monitor market performance and to influence expectations and decision-making. Understanding how the data published by Platts are collected and published will be remarkably revealing of the relationship between the physical and financial aspects of the oil market.

To this end, the author of this thesis attended workshops especially organised and run by Platts to present what they call the *Platts Methodology*. These workshops simulate the publication of data for a specific grade of crude oil, but the same methodology applies across all of the products they cover. The process starts in the morning and ends with the determination of the value that the actors involved deem representative of the price level of the commodity on that day. The value then is added to the series of daily data that are used to draw the time series of crude oil prices.

The procedure begins with the publication of a value on the online platform that is available to all the actors subscribed to Platts. This is the value that Platts analysts believe to represent how much the given product is worth on that day. This value is obtained using a model that considers a range of inputs, such as the final value for the previous day, the expected value for the current day according the futures market of the previous day, as well as any recent unexpected developments affecting the performance of that particular market. Once this value is determined, it is published on the online platform, and quotes for ‘buy’ and ‘sell’ interests or for actual trades are then fed back to the system around this value.

Buy quotes are only accepted below the value of the initial price, while sell quotes only above it, up until the final stages of the price determination process when the barriers

are lifted and quotes can be placed freely. This triggers a bargaining process that leads the quotes to converge towards the initial value up until the release of the restrictions to buy and sell quotes. However, high deviation from this value is rare in the closing bargaining stages in the absence of a market-shaping event, as the positions have already been set and the price level has been accepted among the actors.

The window for submitting quotes closes at 18:00 GMT every day, so market actors have a time up until the official close to submit their interests or trade agreement values. The value that is reached at the end, as the buy and sell values converge to the market value, is published as the *market on close* value and is considered as the fair value of the commodity in the market according to the market actors. If a single value between the buy and sell quotes has not been reached then the average is published after approval by Platts analysts. This methodology is highly valued by market actors as they are directly involved in the price-setting process of the market in which they operate.

This process, however, places a strong emphasis on the links between the physical and financial aspects of the oil market. This is because the *market on close* value is considered the price of the given crude oil, or oil product, in the physical market, and it is the value that is then published by newspapers, reported in the media, and assumed in strategic decision-making the world over. However, this value is shaped directly by two different dynamics. The first is the market itself, which comes into play when price-level precedents are factored into the methodology and when market actors interact to produce the *market on close* value. The second dynamic is the futures market, as expectations of today's price level are formed on the basis of yesterday's futures prices.

This process shapes a performative cycle between the two aspects of the market, as the futures-based expectations of oil value, which is determined by the financial aspect of the oil market through the use of financial models, is used as a benchmark against which current physical trading takes place and market value is negotiated. This is not to say that the value set by the *Platts Methodology* model, which employs futures expectations, will always be equal to the *market on close* value – although, according to Platts, this it is usually very close. In return, the value of the futures prices is determined

as a function of the current price level of the physical market as well as the expectations of its future performance. As a result, what can be observed is that the determination of the physical and financial price levels in the oil market are interdependent, directly affecting each other in a mutual feedback loop.

An attempt to illustrate this graphically is provided in Figure 11, which is drawn from Behr Behr (2009). Here, Behr illustrates the cyclical process whereby the spot and futures prices are interconnected through expectations and financial capital flows in a process that allows financial investments to have a direct impact on the level of oil spot prices.

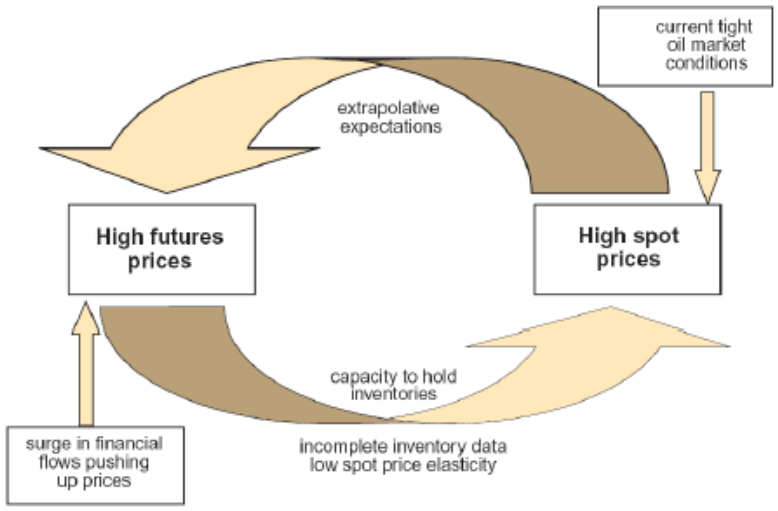


Figure 11-4 Reinforcing Behaviour between Spot and Futures Markets (Behr, 2009)

Timo Behr (2009) claims that in case of market tightening in the structure of the underlying oil commodity market, the spot price of oil will increase. The financial markets will then adjust their expectations of the future price of oil under the new spot price, which translates to higher future prices as new capital enters the futures market in an attempt to capitalize on these positive expectations.

As oil futures prices increase, any producers in the underlying commodity market, or any actors with the resources to store oil reserves, will refrain from selling their stocks at current spot prices because they have the option of selling at a later date for a higher price and, hence, higher returns. This behaviour is known as the storage arbitrage

condition[18], and it ultimately leads to a further tightening of the oil spot price market, as less supply of commodity is made available in the market. Absent an external event, the cycle only reinforces this pattern. In such cases, the body with the power to intervene on the market price is usually the OPEC, although, in some cases, economies with substantial oil reserves have the ability to release them in order to re-balance the market.

An episode of just this sort of performative cycle between the physical commodity market and its oil-based financial products occurred in September 2012, when the financial actors in the oil market reacted to the possibility of an increase in the supply levels from the Middle East by seeking to liquidate their positions under the expectation that the supply levels would not be absorbed by the markets and would eventually drive prices down. Sure enough, Christopher Bellew of Jefferies Bache, a commodities and derivatives brokering house, stated that *'people are thinking that maybe the Saudis are going to produce more, and some funds are taking the opportunity to liquidate positions'* (Choy et al., 2012).

Kaufmann and Ullman (2009) studied the links between the spot prices of crude oil and its futures prices. They propose that prices set by the crude oil futures eventually get passed on to the spot market. As financial actors, such as speculators and investors, purchase futures with the expectation of a price hike based on their assessment of the fundamentals of the market, the spot prices increase through their link with the futures. Therefore, they contend that any explanation of the oil price spike of 2008 must consider speculative activity as much as market fundamentals.

Nevertheless, other authors, such as Silvapulle and Moosa (1999), and more recently Bekiros and Diks (2008), have proposed that the links between the spot prices and the performance of the futures market are bidirectional and not linear. These studies show that both markets react to changing conditions in a synchronized manner, and that the pattern of *leads and lags* varies over time (Silvapulle and Moosa, 1999). Silverio and Szklo (2012), while cautioning against overlooking the role of macroeconomic market fundamentals, seek to find an empirical measure of the degree to which financial

[18] Expected future price = spot price + cost of storage + opportunity cost of holding commodity stock

markets influence the price-setting mechanism that regulates the spot markets of crude-oil benchmarks. Sure enough, evidence to this effect is found in relation to the futures market and the behaviour of speculators, institutional investors, and commercial hedger (Silvério, 2010). Their conclusions confirm the findings of previous studies conducted by Kaufmann (2011), Tokic (2011), Cifarelli and Paladino (2010), Parsons (2010), and Büyükşahin et al. (2008).

Figure 12, from the 2008 UK Cabinet Office Report, gives an illustration of Behr's (2009) suggested relationship between spot and futures prices in relation to the 5-year oil futures price and the Brent spot prices of 2008.

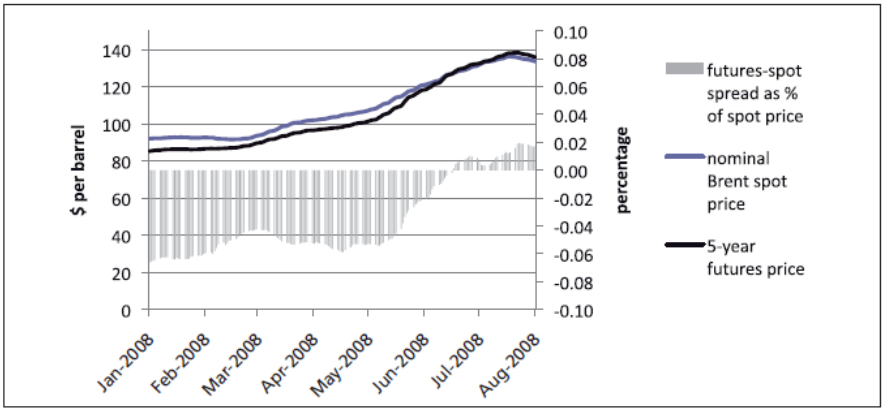


Figure 12-4 Oil futures and Spot Prices (Cabinet Office, 2008)

This discussion raises another question: what shapes the expectations of the financial actors? Owing to the sheer variety of individual actors, a single universal factor, or combination of factors, is surely hard to come by. An attempt can be made, however, at identifying a limited number of broad causal factors. Any oil-market investor, for example, will be influenced, among other factors, by the current oil price level, past performance patterns, global geopolitical events, fundamental macroeconomic indicators, and the international stock market performance.

One factor in particular, though, takes pride of place among the lot: the spare-capacity indicator produced by oil-producing countries (Interview 1, 2011). It has been noted that this indicator is of questionable accuracy and often fallaciously linked to peak-oil fears. Nevertheless, as low spare-capacity levels imply the possibility of a supply

shortage, its role in financial investment behaviour is unquestionable. Figure 13, below, shows that, for example, the spare-capacity levels registered during the period of high oil prices and rampant financial speculation of 2003–2009 was conspicuously low. This is an indication of the role that the fundamental performance indicators of the oil market play in the formation of financial investors' market expectations, which in turn is further evidence of the fundamental link between the underlying commodity and financial markets of oil (Interview 1, 2011).

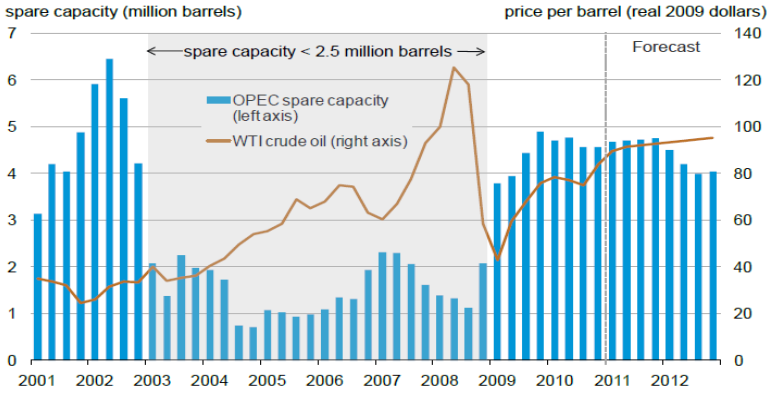


Figure 13-4 Oil-Market Spare Capacity and WTI Crude Oil Price (EIA, 2012)

Analysis of the nature and behaviour of financial actors would be incomplete without reference to what drives their involvement in the oil market. Here, financial investors can be separated between those interested in diversifying their portfolios and those interested in pure speculation. With regards to the latter, despite the lack of reliable data on its exact level of pervasiveness,, evidence exists that speculation, especially since 2001, has had an impact on the volatility of price levels in commodity markets (UN Trade and Development Report, 2009). Even though empirical studies by Chong and Miffre (2010) and by Büyüksahn et al. (2008) conclude that the correlation between commodities and stock returns is not significant, other studies have had opposite results by focusing on the study of increasing prices as the main drivers of speculation.

In order to find a strong indicator of speculative activity in the oil-futures market, analysts in oil firms have attempted to study the movements of spot prices by tracking the volume of net open positions, rather than total volume (Masters, 2008; Khan,2008; Alquist and Gervais, 2011; Interview 6, 11; Platts Crude Oil Prices Conference, 2012).

In so doing, they separate the commercial from the non-commercial positions and calculate the influence of speculation on the basis of the former, as non-commercial positions are believed to be used almost exclusively for the purposes of risk-hedging. Their results demonstrate that the volume of net open positions increased by more than 200 percent between 2003 and 2008, while non-commercial positions reached their peak during the same period (CFTC, 2009b), thus proving that speculative activity was marginal.

In an attempt to identify the levels of speculative activity in the oil market, Khan Mohsin (2009) proposes a comparative analysis of the behaviour of the oil and gold prices as the gold market is already known as a commodity market dominated by speculation-driven investment interests. He hypothesises that the correlation between the performances of the two markets would provide compelling evidence of the kind of investment interests that permeate the oil market. Sure enough, his results confirm a very close relationship between the performances of the two commodities (Figure 14), which leads him to conclude that speculative activity has indeed been taking place in the oil market, especially in the post-2000 period, when the increase in the price of oil accelerates past that of gold. Khan Mohsin proposes that this decoupling can only be explained by an uptick in speculative activity as it became more profitable to invest in oil than in gold (2009). This argument becomes even more compelling when considering that the speculative wave came to a dramatic end after 2008 as the drop in the price of gold, by only 19 percent, paled in comparison to the collapse of the price of oil, which had gone down by about 70 percent (Mohsin, 2009).

Figure 14-4 Real Oil and Gold Prices, 1970–2008 (Mohsin, 2009)

In a similar vein, Tavasci and Ventimiglia (2011), in her study of the financialisation of the copper market during the 1994–2008 period, finds a dramatic change in price level and an alignment of the copper futures and spot prices from 2003 to 2008, as illustrated in Figure 15. In her account, the three most cited explanations for this price pattern are: market fundamentals, in terms of increased demand from China and India (Gros, 2008); speculation in the commodity markets (Veneroso, 2008a; Wray, 2008), where actors, usually in the form of oil majors, restrict their outputs in order to trigger price hikes; and finally, the 'parallel' commodity futures market. On this front, she contends that the deregulatory events of the commodity markets, which started in the 1930s and lasted until the 1990s (when the CFTC started granting Wall Street exemptions on the limits of positions and OTC swaps), contributed to a transformation of the copper market whereby index managers were allowed to take on positions. Especially after 2003, she observes a boom in price levels, which she explains as a result of the increased levels of international liquidity.

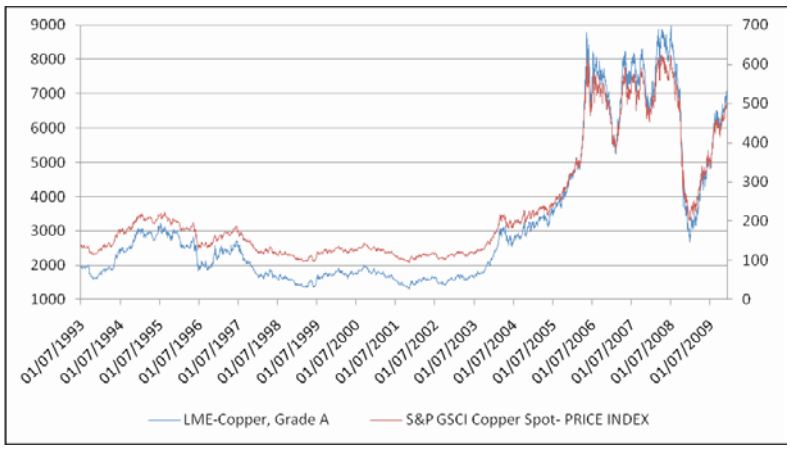


Figure 15-4 Copper futures prices (three months buy) and 'real' copper prices in US$, 1999–2009 (Tavasci and Ventimiglia, 2011)

According to the two studies above, the oil market has become increasingly financialised, especially with the intensification of deregulation, technological advancement, and financial marketization since the early 2000s. This process has transformed the commodity market into an asset class, where financial actors increasingly dominate the dynamics of the oil market by injecting vast amounts of capital and, at the same time, creating direct links between the commodities and asset markets. Within the group of financial actors, studies have revealed the existence of a subcategory of speculative investors and price manipulators. These actors are especially active in the markets of short and spread products and usually follow – or, indeed, drive – noise-trade strategies in order to inflate these markets and take advantage of their fluctuations.

Therefore, the effects of the financialisation of the oil market are twofold. On the upside, the oil market has attracted vast amounts of capital and a larger cohort of market participants. On the downside, this financialisation process has also caused an increase in the spot price level of oil due to the introduction of speculation and price manipulation, which has upended the traditional price-setting dynamics of the market. Not surprisingly, higher prices are usually welcome by oil-producing countries, oil corporations (be they NOCs or *majors*), and even financial investors interested in increasing the price of their investments. This means that as long as the price of oil does not rise to levels that would encourage recourse to alternative energy sources, its negative impact in the market is sustainable (Interview 2, 2012).

In addition to this, the inverse alignment of the oil market behaviour to that of the asset markets after the turn of the millennium has produced increasing volatility in price levels (Pindyck and Rotemberg, 1990; Tang and Xiong, 2009; Platts LNG Forum, 2012; Platts Crude Oil Forum, 2012; Thompson Reuters Energy Analyst Conference, 2012; Interview 5, 2012). The varying lengths of the candlesticks in Figure 16 illustrate this change in price volatility. The chart specifically traces the increase in the price volatility of WTI light crude oil from 1987 to 2011, with the length of the candlesticks marking the high and low prices and the horizontal crossing line identifying the closing point.

Figure 16-4 Crude Light Oil Comp. NYMEX 1987-2011 (Wall Street Journal Online, 2012)

Figure 17, produced by the UK Cabinet Office (2008), illustrates the monthly volatility indicator of the crude oil spot prices since the 1970s. It can be observed that, even though the oil price spikes in the early decades of the oil market financialisation were more intense, volatility has increased noticeably since the late 1980s. Based on a monthly index of oil and other commodity prices covering the period between 1945 and 2005, Regnier (2007) proves that oil price volatility has increased significantly. Duffie, Gray, and Hoang (2004) reach the same conclusion using daily oil price data. Fong and See (2002), Sadorsky (2006), and Agnolucci (2009), using statistical models of time-varying volatility, similarly concluded that changes in oil price exhibit conditional heteroskedasticity. Studies of historical volatility behaviour based on weekly crude oil data, along with weekly oil products data and futures prices since the early 1990s to 2005, confirm the case for volatility, especially in the post-2000 period (Lee and Zyren, 2007; Kang et al., 2009). Other studies, such as those published by Trolle and Schwartz

(2009) and Labban (2010), also suggest an increase in the volatility of the oil spot prices.

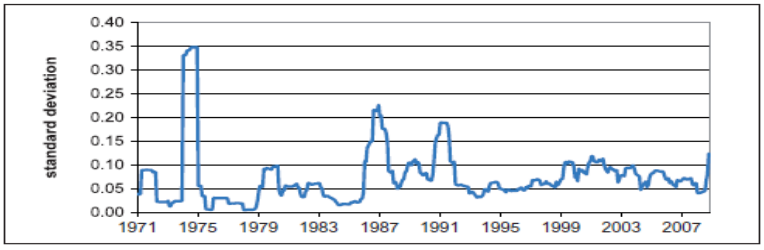


Figure 17-4 Monthly Spot Price Volatility (Cabinet Office, 2008)

The issue of increasing volatility levels dominates all discussions of the financialisation of the oil market. The debate is not settled, however, as different data and different calculation methods – perhaps not surprisingly – yield different results. In opposition to the studies surveyed above, for example, is research based on day-to-day volatility data, which fail to indicate any volatility increase at all. On different grounds, Daniel Yergin, author of *The Prize: The Epic Quest of Oil, Money and Power* (1991), argues that volatility levels in the oil market have only decreased in the wake of the growth of the paper market. Additionally, it has also been proposed that the hedge funds operating in commodity markets are not perpetrators of destabilising volatility, as much as purveyors of liquidity (Haigh et al., 2005).

In the context of this thesis, the volatility levels of the oil market are considered to be increasing. This is because the measurement of day-to-day volatility rates is not a reliable methodological tool in the context of commodity markets where actor behaviour is shaped around protracted international political and economic developments (Interview 3, 2012; Interview 4, 2012). These developments may be anything from social or military turbulence to revised international growth rates, production cuts, or new scientific discoveries. Moreover, the argument of this thesis shows that volatility rates individually are not as relevant to the financialisation of the oil market as the combination of volatility rates and inflated price levels. This is because the same rate of volatility has very different economic and financial effects in the internal and external aspect of a market with a $30 price level at one end and $120 at the

other, especially in the case of the oil market, where production and refinery costs remain inelastic to changes in the price level of the commodity.

Similar price and volatility patterns can be observed in Figures 18–21, which depict the NYMEX price changes of four of the alternative commodities with the highest weights in the composition of the S&P GSCI (Gold 1.58%, Corn 3.12%, Wheat-CBOT 2.75%, Natural Gas 5.78) (Goldman Sachs, 2011). The increase in the rate of volatility in commodity markets after 2000, and more specifically of in the markets of agricultural products, features prominently in Jennifer Clapp's research on the financialisation of the food market (Clapp, 2009; Clapp, 2010).

Figure 18-4 Gold NYMEX 1987–2011 (Wall Street Journal Online, 2012)

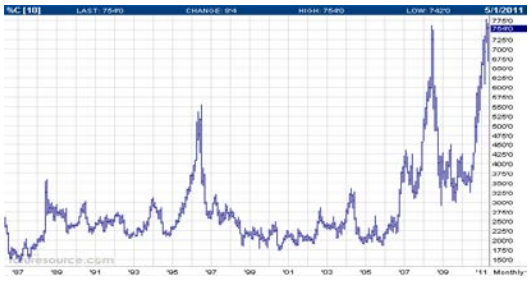


Figure 19-4 Corn NYMEX 1987–2011 (Wall Street Journal Online, 2012)

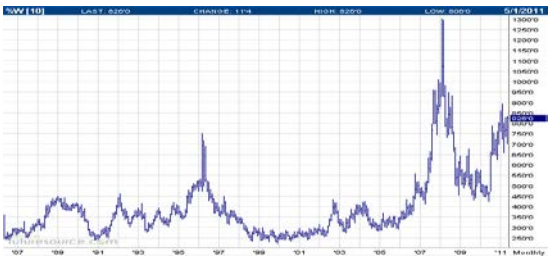


Figure 20-4 Wheat - CBOT NYMEX 1987–2011 (Wall Street Journal Online, 2012)

Figure 21-4 Natural Gas NYMEX 1987–2011 (Wall Street Journal Online , 2012)

The performance of each one of these commodities offers revealing comparative insights into that of the oil market. In the case of the gold market, the price level increases both in real terms as well as in volatility after 2005. This increase is not synchronised with that of the oil market, as the gold market reaches its peak in 2011, while the oil market peaks in 2008. Even so, in 2008 the gold market does experience a noticeable hike in price level and volatility, which is an indication of the influence that

the introduction of commodity indexes had on the gold market and, at the same time, evidence of the post-2000 growth period highlighted in the analysis of the financialisation of oil market. However, according to this chart, the gold market has shown significant resilience to the effects of the global financial crisis of 2008 insofar as it has not suffered as large a drop in price levels in 2009 as the other commodities.

The price levels of the corn and wheat (CBOT) commodities depicted in Figures 19 and 20 follow a very similar trend, being as they are both agricultural commodities. Both price levels show significant volatility before 1999 and after 2007. The post-2007 period, however, is dramatically more volatile than the pre-1999 one, with price levels peaking in 2008. The performance of both these commodities closely matches that of the oil market after 2007; they go through the same peaks, drops, and kinks. This synchronisation is a result of their belonging to the same commodity indexes, which means that demand for their products, though varying in weight and levels, is also synchronised (Pindyck and Rotemberg, 1990; Tang and Xiong, 2009). This shows that the effects of the rise of commodity indexes after 2000 are most visible after 2007; not only do the price level and volatility rate of these commodities increase, but their performance also become more synchronised.

Figure 21, though, paints a very different picture for the price level of natural gas. The level of the natural gas spot prices in the NYMEX (Henry Hub Prices[19]) experienced an inflationary, and increasingly more volatile, trend as a result of the rise of index trading in the post-2001 period. Furthermore, the price level of natural gas peaks twice, one directly before and one directly after the 2008 peak of the oil market. These two peaks primarily show that the price level of gas, unlike that of corn and wheat, is not synchronised to the price level of oil. One reason for this is that natural gas is the only energy commodity in the composition of the S&P GSCI index; as such it can act as a risk deterrent to the performance of oil and its weight in the composition of the index might vary accordingly. This explains why the natural gas price level peaks during the periods when the price level of oil drops.

[19] The Henry Hub is a distribution hub of a natural gas pipeline located in Erath, Louisiana, that is used as the official delivery point for futures contracts on the NYMEX.

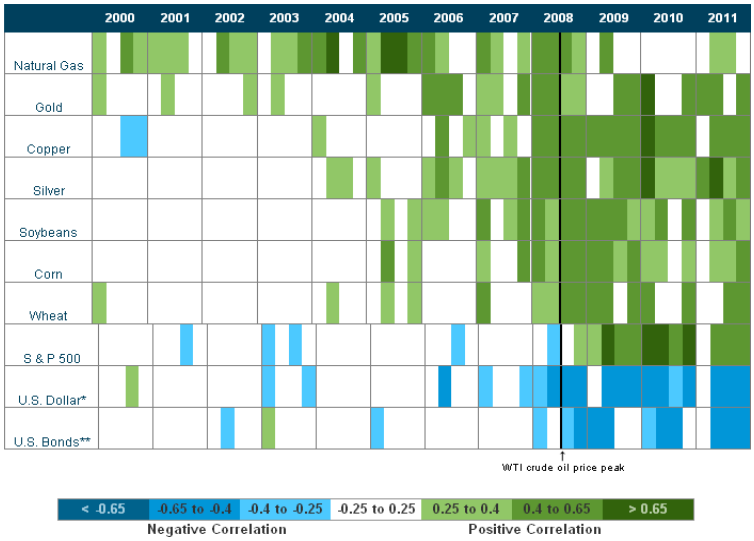


Table 3-4 Correlations between Daily Price Changes of Crude Oil and Other Commodities, and Oil Futures and Financial Investments (EIA, 2012)

Table 3, produced by the EIA (2012), traces the correlations between the price of WTI crude oil and the major commodities throughout the last decade, in the form of natural gas, gold, silver, soybeans, corn, and wheat. It also traces the correlations between crude-oil futures returns and financial investments in US dollars, the S&P 500, and US government bonds ('T' bills). This table illustrates, on the one hand, a growing correlation among the price levels of these commodities as a result of their indexification and, on the other hand, their negative correlation to the performance of the stock markets after 2008, which spelled the end for their use as hedging investments and, with it, the high liquidity levels they attracted during the early 2000s. This can also be a result of the financialisation of the market; as the links between the markets grow, the spill-over effects from one market to the other intensify.

4.4 The Four Actor Structure

The above discussion makes the case that the commodities markets experienced a process of transformation over the past decade. Price and volatility levels experienced hikes across all of the 24 commodities that comprise the most popular commodity indexes (Pindyck and Rotemberg, 1990; Tang and Xiong, 2009, Platts Crude Oil Forum, 2012; Platts LNG Forum, 2012; Thompson Reuters Energy Analyst Conference,

2012; Interview 5, 2012). This transformation aligns with the analysis of the process of financialisation that transformed the oil market with the introduction of index trading and the deregulation and opening of the commodity markets to the many financial and speculative institutions that were hitherto unable to enter.

The element of speculation and price manipulation that evolved within the structure of the market through the effect of financialisation, as well as the gradual involvement of these actors in the market, has increased the effect of volatility, as depicted in the above figures. As financial strategies go, speculation and price manipulation are very risky, as they imply taking positions while more capital attempts to influence market behaviour and to take advantage of the ensuing changes – usually by short selling or betting against the market in order to get high returns to investment (Interview 1, 2011; Interview 4, 2012). The financialisation of the commodity markets, and more specifically of the oil market, has made speculation and price manipulation possible even in said markets (Interview 3, 2012). This is because, in the past, speculative and risky investments were costly, complicated, and unattractive, because oil was simply not available as a financial asset as it required physical delivery and storage. The development of this financialisation process has thus resulted in inflated prices and increased volatility.

Now that oil is available for purchase as a financial asset, without ever taking position of the underlying product, speculation has been made not just possible, but also attractive and, as argued by Khan Mohsin (2009), very real. According to the IMF (2006), Redrado et al. (2009) and Frankel and Rose (2009), increased prices have amplified financial trading and, in turn, speculative activity in the oil market. The risk raised by the emergence of this form of speculation in the oil market is based on speculators' attempts at profitmaking through the manipulation of basic market fundamental. This means that speculators can either sell a substantial amount of investments in the market, thus bringing its price down in order to repurchase it in a lower price, or inject a vast amount of capital, thus causing a rise in the price level and creating a bubble with a sudden inflow of investors (Interview 6, 2012).

As a result, at least up to the early 1970s, the structure of the oil market was shaped by three very important and influential groups of actors, whose power varied through time. The changes in the balance of power that have taken place among these three actors throughout the years have allowed for substantial changes in the functions of the oil market. First, the price of oil changed dramatically during the early 1970s, when OPEC took control of the market and precipitated the 1973 oil crisis. The period after the early 1970s has been characterised by a shift of control of the oil market to the supply side, with producing countries dictating the supply levels of an increasingly inelastic market.

However, a new phenomenon emerged in the 1980s that introduced a fourth, and some claim even a fifth, actor into the market (Figure 22); this was the start of the early-financialisation phase of the oil market. The introduction of oil as a commodity that could be traded in the international financial markets marked the beginning of the oil market financialisation process, which introduced financial investment and, later on, speculation as integral parts of the market dynamics. The oil price level was no longer dictated by the three traditional market forces, since the financial aspect of the market had increasingly gained a dominant foothold in the workings of the market. This influence was reinforced by the rise of the new group of actors – or the new *two* groups of actors, if financial actors are to be divided into hedging and speculative actors on account of their distinct interests and *modus operandi*. The new four-actor structure of the oil market is depicted in Figure 22.

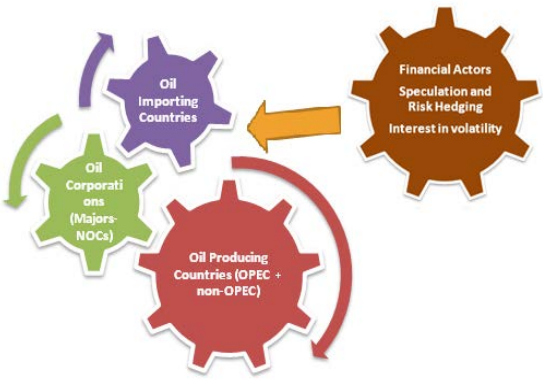


Figure 22-4 Oil Market Structure, post-1980

This conclusion raises the question of how the process of financialisation came to change these dynamics and what role the new group of actors play in the market. The

first observation that must be made at this point is that the actors operating in the oil market have increased exponentially in number (CFTC data, 2011). In the past, the number of producers, importers, and oil corporations had been more or less fixed. The new technologies and the process of financialisation, however, have now opened the market to almost anyone with a computer and an Internet connection (Kurtzman, 1994, Guttmann, 2002, Mackenzie et al., 2012). Even though the largest financial funds that have entered the oil market belong to financial institutions, the amount of individual investments should not be dismissed, as it is the combination of the two that is most indicative of the far-reaching effects that the process of financialisation has had on the oil market. As a result of this, a crash or a shock in the oil market today looks nothing like what it was forty years ago (Interview 3, 2012).

In the 1970s, when oil corporations only enjoyed meagre profit margins and oil-producing economies suffered a fall in profits, the effects were contained within the triangular structure of the market. On the other hand, the same crash today, would not only affect these actors, but also cause massive capital losses to the international financial institutions or individual actors involved in the market. As these institutions and markets are international and unregulated, the effects of this crash spread much wider. Unrestricted by physical or financial barriers, the crash would go beyond the limits of the market structure and thus reach a larger percentage of world economies.

A second way in which the dynamics of the oil market have changed since the inception of the financialisation process is that the price level of oil is no longer determined solely by the interaction of the traditional market forces. The oil futures market performance is directly linked to that of spot prices, which entails that the new actors in the market structure have a direct influence over the price of oil (Interview 3, 2012; Interview 6, 2012). In the absence of speculation, the main interest of financial investors is to increase the value of their investments. Hence, as long as the price level of oil rises, more financial investments will enter the market and push prices further up. In this view, the new dynamic of the price-setting mechanism is one where one group of actors are bent on rising oil prices.

Nevertheless, not all financial actors are interested in raising the price level of oil, as speculative positions on index trading or in spreads can be taken in the possibility of a change, upwards or downwards, of the price level. As a result, this new group of actors has a primary interest, i.e. increased price levels and a secondary motive, increased market volatility. This group of actors, however, does not have the power to influence the market in a direct way, as producers do when restricting output levels. The only exception is during extensive and targeted speculation when the price level can be manipulated to a significant extent, as discussed above. As a result of these two developments in market dynamics, the effects of volatility are now being felt by an increasingly wider spectrum of actors in an increasingly wider geographical and demographic area.

There is evidence to the effect that the oil market has gone through a process of evolution since its deregulation and financial marketization and that, in particular, the volatility of its price levels has seen abrupt and extensive upward changes. There is evidence, also, to show that the oil market has undergone a process of financialisation with the emergence of a new group of actors who has built links to the asset markets and, with the help of an emerging class of speculators in their ranks, has altered the dynamics of the traditional price-setting mechanism of the market. This evidence is furnished and discussed in Part 2, which offers a close review of the events that marked the three periods of financialisation identified in this thesis.

PART 2

THE THREE PHASES OF OIL FINACIALISATION

5 The New Oil Market and the Macroeconomy

This chapter studies the effects of the financialisation process during an oil shock, and its links to the macroeconomic performance. This approach serves a dual purpose. Firstly, it illustrates the political-economic issues that arise from the spread of the financialisation process in the oil market structure; secondly, it helps to better understand the extent to which the scale and pace of this spread can be attributed to the effects of the oil shocks and, in turn, if it can account for the emergence of certain international macroeconomic pressures. This particular analysis will reveal the existence, and historical evolution, of a direct link between the performance of the oil market and macroeconomic indicators.

The use of oil shocks as analytical benchmarks is instrumental to the argument of this thesis. The study of the rise of the financialisation process in the oil market requires empirical analysis of the likely effects that such a destabilising process may have had on the performance of the market. Focusing this historical analysis on periods of extreme price shocks makes the mechanisms of financialisation more visible than they would

otherwise be under normal circumstances. This will help to lay bare the underlying dynamics of financialisation of the oil market.

The disconnect between the fundamentals of the market and its actual performance at times of price shocks coincide with the peaks in the decoupling of asset markets and commodity markets associated with the financialisation process. This is because the paper market performance does not reflect the fundamental performance of the underlying market commodity, owing to the rise of speculative and manipulative interests caused by financialisation. In this sense, if a shock crisis acts as a window into the effects of financialisation, a number of such crises will point to the evolutionary trend thereof. The success of this approach depends on how the effects of financialisation during oil shocks are observed and recorded.

Several methods have been suggested for defining the nature and effects of oil shocks. The basic concept of an oil shock, though, refers to an increase in the market price of oil. According to Blanchard and Gali (2007), in order for an increase in the price level of oil to qualify as a 'large oil shock' it has to be an *'episode involving a cumulative change in the (log) price of oil above fifty percent, sustained for more than four quarters'* (Blanchard and Gali, 2007). These criteria match the shocks of 1973, 1979, 1999, and 2002, as indicated by the shaded areas in Figure 23. Paul Segal (2007), in another similar study on the subject, selects the same years of reference.

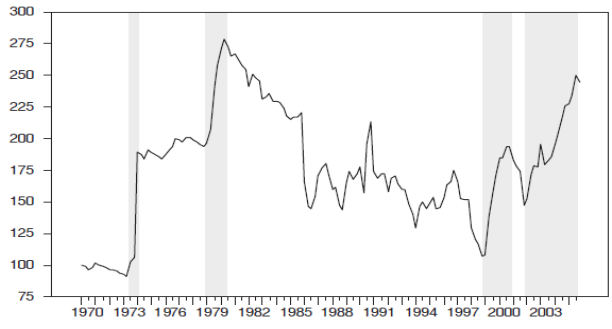


Figure 23-5 Log Real Oil Price, 1970 = 100 (Blanchard and Gali, 2007)

Other academics consider not just 'large oil shocks', but also smaller upward shocks and, thus, they often include the spike of 1990/1, however short-lived in comparison. In

a paper on the effects of military activities on the oil market, William Nordhaus (2007d), for example, includes the 1990/1 spike among the four different shocks considered, which surprisingly, however, miss the 1999–2001 shock. This distinction between large oil shocks, shocks, and spikes in the oil-market price level is critical, because it determines the data pool available.

This thesis considers five distinct shocks, including both the 1990/1 and the 1999–2001 shocks, in an attempt to guarantee a more complete and inclusive picture of financialisation and to access a greater pool of data specifically from the post-1980 period, when financialisation first emerged in the oil market. This thesis makes no distinction, however, between oil price indicators. Despite the range of internationally available oil price indicators, such as the WTI crude, the Brent Crude and the MARS crude, their price level is continually and closely linked by arbitrages, as immediately visible in Figure 24. The thesis will quote primarily the WTI crude oil level, and take it as a representative value.

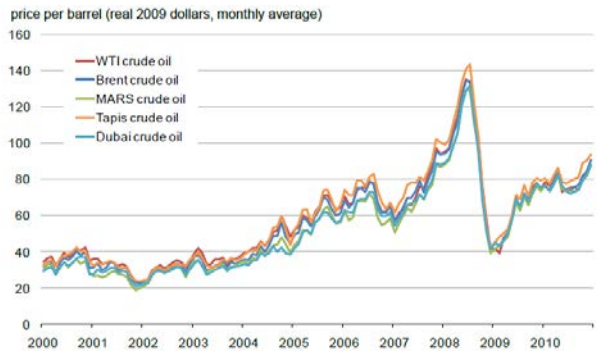


Figure 24-5 World Oil Price Indicators (Bloomberg, 2011)

What follows is an empirical analysis of the economic environment that may be most unequivocally revealing of the financialisation of the oil market. This analysis proceeds for the theoretical and historical conclusions posited in Part 1, namely that (1) a new oil-based financial market has appeared over the past decades that has allowed for oil to be traded as a financial asset; that (2) the nature of this market has attracted vast amounts of capital from financial actors and institutions who are not primarily interested in the underlying commodity and have thereby altered the traditional pattern of investment

strategic positioning and decision-making; that (3) a link between the performance of the oil market and the financial asset markets has existed since its emergence as a financially traded commodity; that (4) after 1999 access to this market was dramatically facilitated by the introduction of new technologies; and, finally, that (5) speculation has been an increasingly influential determiner of oil prices since 2000.

Building on these premises, Part 2 of this thesis will assess whether the international macroeconomic environment has indeed been amenable to the emergence of a process of financialisation in the context of the oil market. This analysis will be conducted against the particularly transparent background of the oil shocks, and especially of the years 1989–1999, 1999–2003, and 2003–2010, and will look for specific patterns of financial activity and speculation in the volume of oil-based financial trade and in the performance of other financial markets and macroeconomic indicators.

This is because the evolution of the process of financialisation is connected to, and contingent upon, macroeconomic performance. The only compelling critique of this comes from Hooker (1996) and Rotemberg and Woodford (1996) who claim that the effects of oil shocks vary with time, thus making the correlation between oil prices and macroeconomic performance especially tenuous. Even so, a larger number of studies present strong evidence to the contrary. Bruno and Sachs (1985) argue that the levels of output and inflation after the 1970s crisis could in no small part be attributed to the influence of the oil shocks. Hamilton (1996) reports an interesting correlation whereby every US recession has been preceded by an oil shock. Edelstein and Kilian (2009), Herrera and Pesavento (2009), and Blanchard and Galí (2007) find that oil prices have a direct impact on the US macroeconomic performance, which they conclude has progressively decreased. On this note, Mork (1989) and Hooker (2002) contend that even though the relationship between the oil market and macroeconomic performance has changed and evolved through time, this is in part because – and in spite – of the fact that both have evolved individually, too.

On this point, Baumeister and Peersma (2009a) argue that the oil market has changed along with global capacity utilisation rates, which have been operating in overcapacity from the mid to late 1980s, just as they had in 1973/4 and 1979/0 (Kilian, 2007). They

also point out that this change was strengthened after the mid-1980s, when the decreasing power of the OPEC cartel and the increasing marketisation of oil replaced the pricing regime with direct trading in the spot market and with the introduction of the oil futures market, which resulted in greater oil price volatility (Hubbard, 1986; Mabro, 2005). Commenting on Blanchard and Galí (2007), Rotemberg (2007) argues that increasing levels of volatility can be explained by the change in the dynamics of the oil market price-setting mechanisms.

Bernake et al. (1997), in their *Systematic Monetary Policy and the Effect of Oil Price Shocks*, contend that the efficiency of national monetary policies has developed over time to make the macroeconomic structures more immune to changes in oil market volatility. This resulted from the gradual liberalisation of monetary policy institutions, especially central banks, as well as from a fuller understanding of the workings of the economy. This increased efficiency has also been attributed to an increase in the flexibility of labour (Bernanke et al., 1997) and capital as well as to a change in the composition and role of the heavy industries (Edelstein and Kilian, 2009).

In light of the above, it is important to stress that a linear analytical approach cannot fully capture the link between the oil market and macroeconomic performance. Rather, this link is better analysed as the evolution of relationship between two independently evolving, rather than constant, factors. The concepts of evolution, globalisation, financialisation, modernisation, and even marketisation are a reality as much for the macroeconomy as for the oil and financial markets. The centrality of oil in debates about energy requirements, particularly in the West, has changed substantially since the 1970s. Therefore, this thesis will approach this study as a relationship of two evolving entities.

A number of macroeconomic effects can be observed in oil-importing economies as a result of an oil shock. Primarily, according to Blanchard and Galí (2007) and Roubini and Setser (2004a), increased oil prices cause an increase in inflation rates and input costs and a reduction of real wages, of demand for non-oil products, for which less real income is now available, and of aggregate net investment levels. In addition to this, tax revenues decrease while the budget deficit likely increases as a result, along with

interest rates. Lower real wages and higher inflation lead to pressures for an increase in the level of nominal wages, which, combined with lower demand for non-oil products, create or exacerbate unemployment.

Lilien (1982), on the other hand, has formulated a 'dispersion hypothesis', based on the idea that oil price changes affect different economic sectors to different extents. More specifically, he explains that different sectors are dependent on different resources, so price changes in one or some of these resources will not affect all sectors equally. He also adds that, in the short run, the costs of readjusting essential resources have increased, which can result in a total loss of output. This, however, is rarely proportional to the contractions and expansions caused by the rise and fall of resource prices. This pattern becomes evident when observing the global levels of oil consumption and GDP against oil prices, and especially against the effects of the 2001 and 2008 oil shocks (Figure 25). The extent of these effects is determined by the expectations of an oil price increase; the more large and unexpected the more it will take the markets by surprise to even more devastating effects (International Energy Agency, 2004: 5). These effects are all the more pronounced as financial investment and speculation percolate through the oil market.

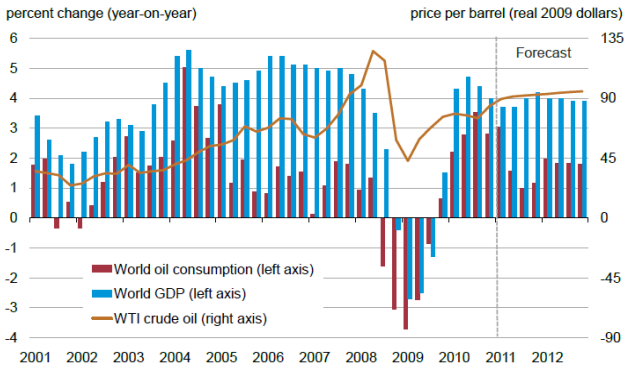


Figure 25-5 World oil Consumption and GDP levels against WTI Crude Oil Price (EIA, 2012)

The negative effects of an increase in oil prices do not end there. On the external side of oil-importing economies, trade balance, in particular, will be distorted; this is due not only to the rising costs of oil imports, but also to the deteriorating health of the internal macroeconomic performance, which reduces productivity, competitiveness, and

ultimately exports. This will negatively affect the balance of payments and apply depreciation pressures on the exchange rate. As a result, oil imports will become even more expensive and lead to an international redistribution of wealth as increased transfers of value are made from importing countries to producing ones. This translates into increased budget deficits in importing countries and increased budget surpluses in producing ones, which in turn intensifies all the negative effects described above (International Energy Agency, 2004: 5): wider deficits and balance of payments, unless redressed by severe corrective policies, will exacerbate the levels of investment, productivity, prices, and employment. The only way to prevent this economic race to the bottom is the introduction of heavy-handed, but prudent, monetary and fiscal policies (International Energy Agency, 2004: 23).

Oil-price-shock date	Oil-price-peak date	Change in real oil price (%)	Change in unemployment rate (% points)	Change in output gap (% points)	Change in PCE inflation (% points)	Change in CPI inflation (% points)	Change in labor productivity growth (% points)
1973Q3	1975Q2	155	4.1	-7.5	2.5	2.5	-1.8
1978Q4	1980Q3	97	1.8	-6.3	2.7	3.6	-2.1
1990Q3	1990Q4	27	0.4	-1.5	0.5	0.7	-0.5
2002Q4	2006Q2	125	-1.2	2.1	1.4	1.7	-1.5

Table 4-5 Macroeconomic Data From Major Oil Shocks (Nordhaus: 2007)

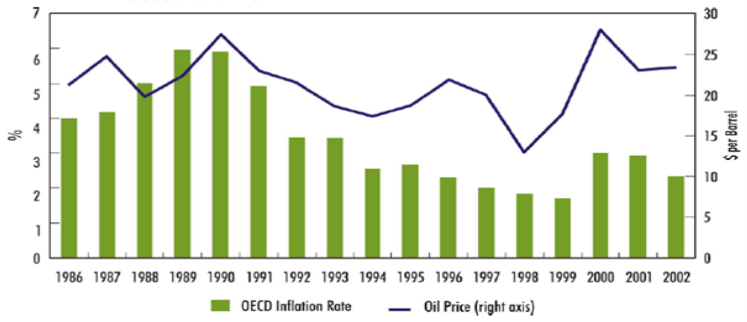


Figure 26-5 OECD Inflation Rate and Average IEA Crude Oil Import Price in 2000 Dollars (IEA, 2004)

The link between the oil market and macroeconomic indicators is depicted in Table 4 and Figure 26. Table 4 illustrates the main macroeconomic indicators of the OECD countries during periods of high oil prices. The table describes a decrease in growth and inflation levels, but a decrease in current-account levels. In Figure 26, the relation

between the inflation rates of the OECD countries is sketched against the average cost of oil imports: the correlation between the two is plain to see.

As a result, a rise in the price level of oil will, at least in the short term, influence negatively most of the fundamental macroeconomic performance indicators of oil-importing economies. On a different note, the oil market has also the ability to influence the external aspect of importing countries' macroeconomies to a great extent (International Energy Agency, 2004: 12). This is mostly due to its influence on international exchange rates and trade deficits, inflated by the rising prices of an inelastic primary commodity.

The macroeconomic effects of oil shocks can provide valuable insights on the effects of the process of financialisation on the oil market. Considering that the oil market has been financialised in terms of being marketed as a financial product, the actors operating within this financial market operate the same way as in any other financial market. In other words, they constantly try to outguess the market by relying on past experiences, heuristics, as well as equations and expectations based on economic fundamentals. Therefore, as investors position themselves in such a way as to increase their profits by the expected change in interest rates (Roubini and Setser, 2004a) or by the returns on their investments, any change in the oil price level will cause financial adjustments as the values of the fundamentals change (Labban, 2010).

This has an impact on consumer confidence and expectations, which in turn influence financial markets through both the stock market and demand for credit and loans. The link between the oil market and the performance of the fundamental economic indicators of oil-importing countries spreads uncertainty in the markets, while directly affecting any financial or economic decisions based on them. What is more, since many Western countries such as the US and the UK have highly leveraged households with increased debt burdens which only rise in tandem with interest rates, savings and investment rates drop (Roubini and Setser, 2004a).

Additionally, as the price of oil affects real household income, oil shocks will further reduce the percentage of it available for financial investments. Figure 27 graphically

displays the negative effects that rising oil prices have on the total consumption levels of the OECD economies. These effect are intensified by the fact that an increase in oil prices usually causes an equal increase in all oil-based products, such as gasoline and heating oil (Figure 28), especially for upward changes (Interview 2, 2012). This further exacerbates the negative impact of an oil shock on disposable income and consumption levels.

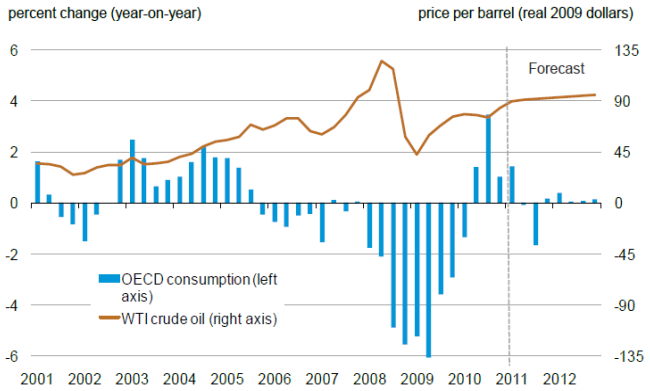


Figure 27-5 OECD Consumption against WTI Crude Oil Price (EIA, 2012)

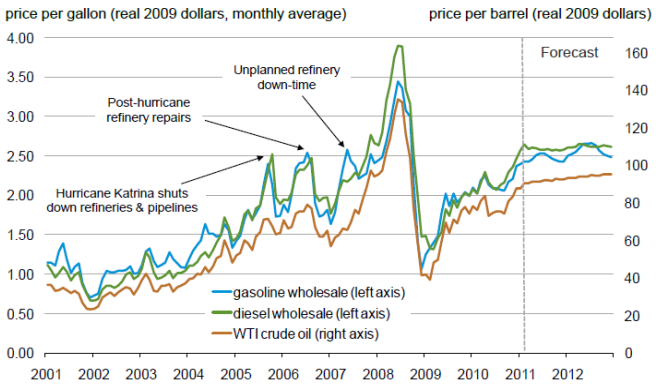


Figure 28-5 Crude Oil and the main Petroleum Products (EIA, 2012)

The above reduction in disposable income, consumption, and available capital directly affect the stock-market performance. In other words, oil price shocks are expected to affect the financial market performance directly, by shaping negative expectations, reducing consumer confidence, reducing the levels of internationally available capital for financial investments, and reducing the international levels of savings and investment. This raises the following question: how can the macroeconomic effects of an oil shock illustrate the growing influence of financialisation in the oil market?

5.1 Tracing Financialisation

The question on the transitive relation between oil shocks and macroeconomic performance, and macroeconomic performance and the financialisation of the oil market can be answered on several levels. First, the financialisation of the oil market has introduced numerous new actors to its international dynamics, including financial institutions and individual actors. Hence, the negative effects of an oil shock should be expected to spread wider as the financialisation of the oil market accelerates. Since more actors are involved in the oil market through their investments, and oil shocks directly affect them, then an increasing spread of these negative effects should be traceable beyond specific geographical areas. The negative impact of oil shocks on these actors' investment portfolios should also be expected to put pressures on the financial and macroeconomic performance of their economies. Therefore, an increasing number of economies being macroeconomically affected by an oil shock should be considered as an indicator of the spread of the market, which in turn is a direct result of the opening-up caused by financialisation.

Secondly, the crises caused by the oil shocks should be expected to deepen and widen as a result of the financialisation process in the oil market. This is because, as more and more actors get involved in the oil market and invest increasing amounts of capital, then when an oil shock occurs, an increased amount of portfolios will be affected. Since the volume of capital invested in the oil futures market has dramatically increased during the past ten years, any oil crisis that occurred since should carry deeper financial and economic consequences than those before them. The financialisation of the oil market implies that a new link between international economies and the oil market has developed, and it is that of invested capital. Since the volume of invested capital has increased, the loss of capital will be comparatively greater during a recent shock than an earlier one; hence, more losses imply less capital available for alternative investments, and as investment levels are crucial to both the macroeconomic and financial performance, the financialisation effect should be expected to determine an increase in the depth of the crises caused by its shocks.

Thirdly, even exchange rate parities can provide a tool for tracing the financialisation of the oil market in the international macroeconomic performance during periods of oil. In the absence of financialisation, an oil shock would have direct effects on the value of the US dollar and its parity with the other international currencies, mainly owing to trade deficits and the national debt. There is a negative relationship between the price level of oil and the value of the US dollar (Krugman, 1983a; Golub, 1983; McGuirk, 1983; Rogoff, 1991; Throop, 1993; Amano and van Norden, 1995; Dibooglu, 1995; Zhou, 1995; Medlock and Jaffe, 2009). As suggested by Faruqee (1995), an increase in the value of oil, however, also has a positive effect on the US dollar by increasing its global demand, since oil is marketed in this currency; however, empirical evidence put forward by the above-mentioned studies illustrate that any positive effect in the value of the US dollar is offset by negative relationship forces. This relationship does not change even in the presence of the effect of financialisation in the oil market, where the positive effects that an oil shock would have on the US dollar parity should be increased, as there would also be an increase in the global demand of US dollars for the purchase of oil-based financial products, which are, too, mostly marketed in US dollars.

Fourthly, the effects of the process of financialisation of the oil market can also be traced in the balance of payments. The balance of payments denotes the difference between the current and the capital account and supports the relationship between goods and financial markets at an international level. The effects of an oil shock on the underlying commodity of oil will appear in the current account. On the other hand, the effects on the financial market of oil will appear in the capital account, which should also feature some record of its financialisation as this market grows. As a result, whereas in the absence of financialisation, the effects of an oil shock would only affect the current account, that both the current and capital accounts, and hence the balance of payments, should be affected should be expected to vindicate the existence of a process of financialisation in the oil market.

Fifthly, while changes in the motives of an investment in the oil asset market are traditionally traceable over time, this should be expected to be more difficult with the rise of financialisation in the oil market which, as previously discussed, multiplies the number of financial investors completely detached from the physical market and, with

it, the amount of capital invested for purely financial or speculative motives, rather than for insurance or otherwise risk-hedging ones. This rise of the financial investor in the oil market can be traced by considering both the amount of capital invested in each oil-based asset, as these assets represent different approaches and investment strategies, and how such capital behaves during turbulent periods.

The historical study that follows will trace the spread of financialisation in the oil market during oil shocks on the basis of the five criteria given above. In doing so, this analysis will look at the financial and macroeconomic performance of the US economy and at the composition of the oil market, during three post-1970s oil shocks. The choice of the US as the primary country of reference is motivated by the fact that the US is the international financial centre, it has been highly dependent on imported oil for the past decades, and is the issuer of the official currency of the oil market. The choice of the three oil shocks is based on the fact that no effect of financialisation could possibly be traced prior to the 1980s, as the market lacked any financial dimension before then. As a result, the inclusion of all three post-1970s oil shocks will make more data available for the purpose of tracing the spread and effects of the financialisation process in the oil market, which will lead to more concrete results.

The following three chapters focus on the oil-related macroeconomic, financial, and political developments of three central periods in contemporary economic history, the periods of low (1980–1990), early (1991–2001), and advanced (2002–2008) financialisation. These historical overviews will trace the evolution of the financialisation process, the role of speculation in its development, as well as the existence and strength of the evolving link between the oil market and the US macroeconomic and financial performance. As explained above, any effects of the financialisation process on the macroeconomic performance will be more conspicuously and immediately visible against the particular background of the US.

This study is central to the argument of this thesis as the effects of the financialisation of the oil market are all the more evident during oil shocks. Their economic, financial, and geopolitical outlook, hold important clues to the synchronicity and causality links between oil shocks and oil financialisation. Indeed, these periods will be found to share,

among other characteristics, an underling, and intensifying, dynamic. This dynamic is argued to derive from the financialisation of the oil market insofar as it has influenced the intensity as well as the geographic and demographic reach of the effects of the oil shocks.

6 Early Financialisation (1989–1999)

Out of the three oil shocks studied in this thesis, the one that took place in 1991 is the least financial in character. This is because its origins seem to be purely driven by market forces, and because it took place at a time when the oil market was yet to be 'financialised'. During this period, international levels of oil demand were relatively stable and there were no significant disturbances in the supply of oil, with the exception of a few restrictive developments in the Middle East. Nevertheless, even though this oil shock took place during a period when the oil market was not dominated by financial motives, strong links can still be observed between its performance and the macroeconomic and financial performance of the US. Studying the nature and intensity of these links in the absence of pure financial influences will help to set a baseline for the analysis of subsequent crises.

The US political-economic situation after the 1979 oil shock was recovering fast: the US was in a very strong international position under President George Bush; the US economy was booming, with growth rates reaching 4.5 percent in 1988; the unemployment rate was stabilized between 5 and 5.5 percent; and the inflation rate rarely exceeded the barrier of 4 percent. However, the Federal Budget was in a very difficult position as this boom had been underwritten to a large extent by government expenditure.

For this reason, during the late 1980s the Federal Reserve was attempting to guide the US economy to a 'soft landing' by gradually reducing its budget deficit (Cooper, 1992: 156). Their aim was to reduce growth levels to a sustainable 2/2.5 percent, while avoiding a further slowdown that at the time would have likely caused a recession. Up until the beginning of the 1990s, the contractionary monetary policy adopted by the Federal Reserve seemed largely successful (Cooper, 1992: 156). At the same time, the US President had agreed to hold talks to reduce the levels of government expenditure.

Nevertheless, during these discussions, events from the Middle East got in the way of this path towards economic readjustment and stabilisation. Iraq invaded Kuwait on August 1990 (Hybel, 1993: 32) as they announced that Kuwait and Saudi Arabia were committing an act of war by increasing their levels of oil production, which had led to a reduction in the agreed price of oil from $18 a barrel to $7 per barrel[20] (Hybel, 1993: 30).

The US made it clear that Iraq's actions would not be tolerated (Cooper, 1992: 158) and deployed forces on Saudi Arabia in order to expel the Iraqi forces out of Kuwait. It has been calculated that the military 'bonus' expenses of this war surpassed the $100 billion mark over the period from 1991 to 1995[21] (Korb, 1992: 223-226). What is more, the US not only isolated Iraq's and Kuwait's accounts on foreign soil, but also introduced a full embargo effective to all their products, including oil (Cooper, 1992). Considering that the states of Iraq and Kuwait held 20 percent of the total world oil production at the time; this embargo clearly caused great disruption to the oil market equilibrium of supply. Any supply restriction of this magnitude leads to an increase in the price level, especially since the levels of demand are inelastic given the nature of the good and the time frame. This figure becomes even more significant when taking into account that the US economy imported a higher amount of its oil from the Middle East (EIA, 2010). This restriction of supply levels was therefore reflected on the price level, which more than doubled within months of the beginning of the conflict.

[20] Saddam's aspiration was to become the leader of the Arab world by incorporating Kuwait and Saudi Arabia, which would have given him control of more than half the world oil production (Kuniholm, 1993: 99).

[21] In order to do this, President Bush placed the costs of all the military operations that would take place in the Gulf 'off budget' to spare them from budget cuts.

Figure 29-6 Oil Price in US Dollars 1989-1999 (Bloomberg, 2011)

Even though strategic oil reserves had already been built, especially in the US, after the events of the 1970s, they were not released due to the political implications of such action. As expected, the spare-capacity levels of the OPEC countries' oil production dropped significantly during this period (Figure 30), reflecting the turbulence that these conflicts had created within the Middle East.

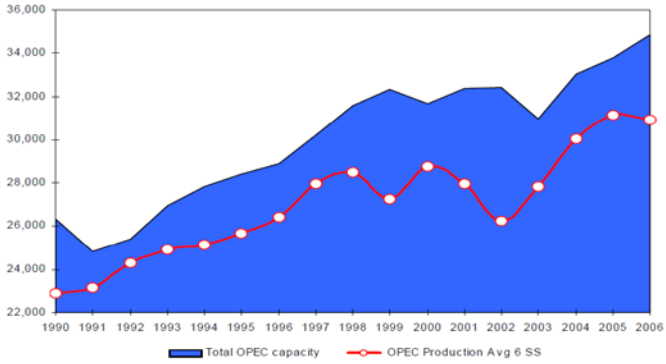


Figure 30-6 OPEC Capacity and Production of Oil (OPEC, 2007)

As a result, the embargo of Iraqi and Kuwaiti oil, along with the disruption of the market equilibrium caused by the military operations, led to what is known as the third oil shock (Miller, 1998). The price of oil more than doubled, from $15 to $33 per barrel. What sets this particular oil shock apart from the other ones studied in this thesis is mainly its duration; this shock was short-lived, as can thus be characterised more accurately as a spike than as a large oil shock. However, even though the actual hike in the price level was short-lived, its effects in the US economy were extensive. The study of these effects may shed some light on the functions of the oil market and on its links to the financial and macroeconomic performance.

The historical context behind this oil spike is significant. At the time, in conjuncture with the government budget reviews, the Federal Reserve was attempting to slowly reduce growth and inflation to more sustainable levels without running the risk of sliding into a recession. This process, already in place before the spike hit, had been largely successful until the Gulf War and the oil price spike. As depicted in Figures 31–35, prior to mid-1990, US interest rates had increased as a result of the Federal Reserve attempt to reduce growth and inflation rates, which stood now at around 2.5 and 3 percent respectively. With unemployment stably below 5 percent, the US economy, and its contractionary monetary policy, was indeed faring well.

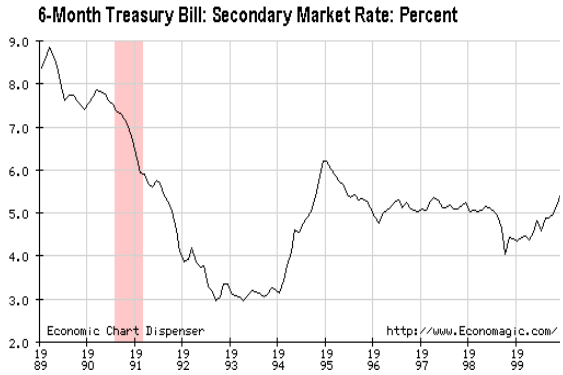


Figure 31-6 US 6-Month Treasury Bills 1989–1999. Pink area = Recession (Economagic, 2011)

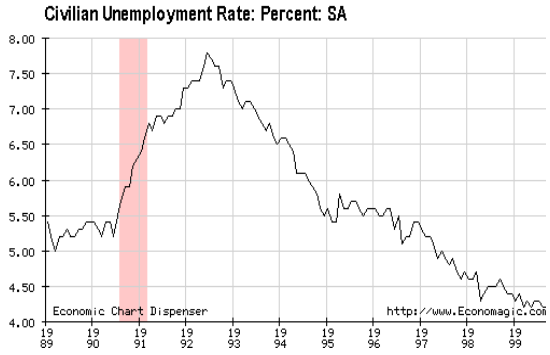


Figure 32-6 US Unemployment rate 1989–1999. Pink area = Recession (Economagic, 2011)

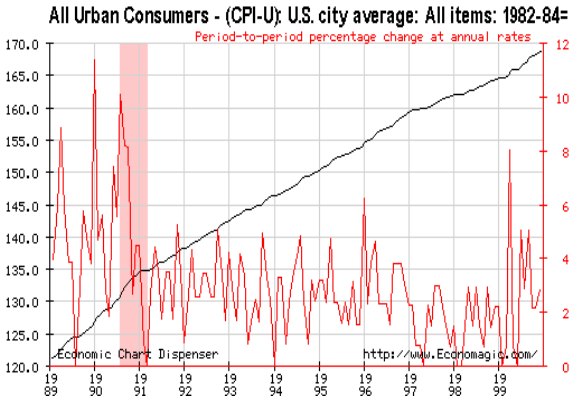


Figure 33-6 US Inflation rate 1989–1999. Pink area = Recession (Economagic, 2011)

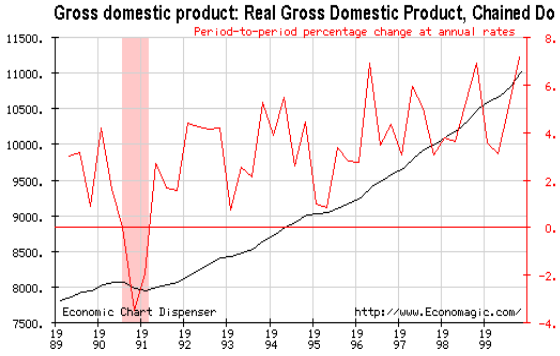


Figure 34-6 US Gross Domestic Product 1989–1999. Pink area = Recession (Economagic, 2011)

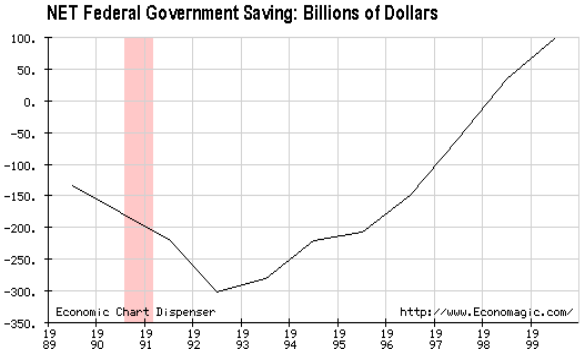


Figure 35-6 US Federal Government Budget 1989–1999. Pink area = Recession (Economagic, 2011)

However, this situation changed dramatically after the first half of the year 1990. The oil price spike and the possibility of a war in the Gulf affected the markets extensively. The increased oil prices, along with the fear that the military activity would affect oil prices further, gave rise to an increasing wave of negative expectations across the US markets. In addition, the refusal by the US government to release its oil reserves hardly helped to reduce the uncertainty and negative expectations in the markets, which were desperate for some measure of reassurance.

Figures 31–35 provide a graphical representation of the economic and financial performance of this period. By the middle of 1990, and precisely the 2nd August 1990, all the basic fundamental economic indicators had been destabilised. First, there is both a noticeable acceleration of the inflation rate, which was met by a decrease in interest rates, and a reduction of the real growth level, also reflected in the unemployment rates. While the inflation and growth levels decreased after the end of the Gulf War, unemployment and interest rates did not recover until the second half of 1992. At the same time, while a revised budget was being agreed, the deficit continued rising, reaching $279 billion in 1991 (Nye, 1992: 222), and was not helped by a devaluated exchange rate.

The US was faced with increased expenditure levels and at the same time was being locked in the position where of having to purchase more expensive oil in a devalued currency, which raised its deficit level even further. The loss of value of the US dollar

was evident throughout the 1990s, as seen in Figure 36. The actual loss of value was more than 10 percent. It is also worth noting that, though oil prices normalised in 1991, the unemployment level and the budget deficit did not start recovering before the late 1992.

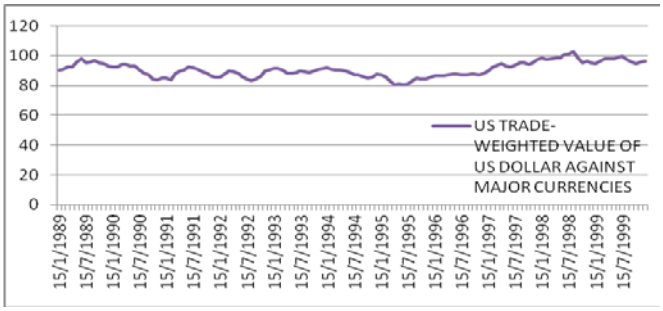


Figure 36-6 US Dollar Trade Weighted Value against Major Currencies 1989-1999 (Thomson Reuters DataStream, 2011)

At the consumer level, US personal income and consumption is plotted on Figure 37. The effects of the crisis are clear: the levels of US personal income decelerated in both, 1991 and 1993. In 1991, growth did not reach negative values, as it did in 1993, but persevered over a much longer period. By contrast, the levels of consumption only decelerated in 1991 and were virtually unaffected in 1993. This is because the 1991 crisis affected both personal income and public expectations of a crisis, which stabilised savings and reduced spending. In contrast, the 1993 reduction of personal income was short-lived and was not accompanied by the expectation of a crisis, thus the level of consumption was spared.

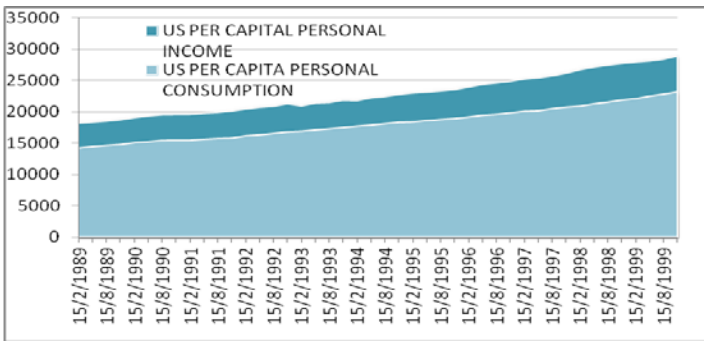


Figure 37-6 US Personal Income and Consumption 1989-1999 (Thomson Reuters DataStream, 2011)

The financial markets were affected by these events as much as the macroeconomy. The volume of layoffs in Wall Street increased during this period as a result of the destabilisation of the banking system (Stewart, 2008). People and firms were defaulting on loan payments, while the US real estate sector was failing as real estate prices went down. Figure 38 shows a deceleration, however small, of the level of US employment in financial activities. Similarly, Figure 39, which displays a breakdown of the US GNP between the financial, insurance, and real estate (FIRE) sector and the rest, shows that the deceleration of the US GNP was not derived from a contraction of the financial sector.

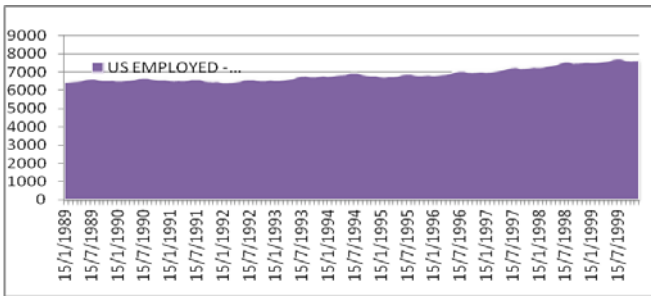


Figure 38-6 US Employment in Financial Activities 1989-1999 (Thomson Reuters DataStream, 2011)

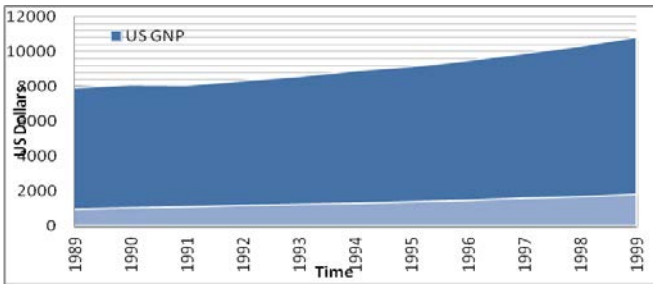


Figure 39-6 US Total GNP and FIRE (Finance, Insurance and Real Estate) GNP 1989-1999 (Thomson Reuters DataStream, 2011)

However, the stock market performance during this period suffered from a substantial deceleration (Figure 40). Even though this financial crisis is often characterised as a 'mild' one (Stewart, 2008), the drop of the stock SPX index[22] from above US$360 to below US$300 is symptomatic of a crash that, albeit less than a year long, extensively affected its financial performance while not necessarily being a product of its doing.

[22] The SPX index refers to Standard & Poor's index of the top 500 publicly traded companies.

Therefore, even though the financial sector did not directly affect the events of 1991, it can be argued that the events of 1991 directly affected the financial sector.

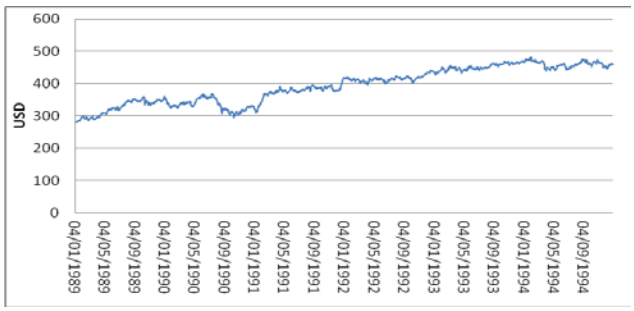


Figure 40-6 SPX Index US Dollars 1989–1994 (Bloomberg, 2011)

As the oil market was not yet widely established as a product tradable in the financial markets, this deceleration can only be attributed to its links with the macroeconomic performance as well as to the increased drop in the consumer confidence levels of this period. Although the International Petroleum Exchange (IPE) released the first oil futures contract in 1981, the first Brent Crude future was actually launched in 1988, and the market has experienced continuous growth virtually every year ever since.

The introduction of those contracts allowed market participants to purchase a risk-hedging product that could provide insurance on the investments they were involved with in the physical oil production market. This is because these futures contracts had the ability to provide an agreed and guaranteed forward price valuation for oil, which could be used as a guide for their investments, as well as for calculating future costs and returns. This future price valuation was not necessarily the optimal one as factors of risk, expectations, and uncertainty were always involved; but they did provide with a measurable and guaranteed value. As a result, many market participants, in the form of producers, heavy consumers, refiners, or marketers of oil, entered the market to insure their investments (Interview 2: 2012).

At this point, Goldman Sachs built a new asset class based on commodities and successfully promoted it as the GSCI (GSCI Manual: 2005). This index allowed almost anyone to enter the financial markets, without having to actually take delivery of the

final product, allowing them to get involved in the market with purely financial motives. The GSCI was soon followed, with various rates of success, by other indexes, such as the Thomson Reuters/Jefferies CRB Index (TR/J CRB), the Rogers International Commodity Index (RICI), the Deutsche Bank Liquid Commodity Index (DBLCI), the Standard & Poor's Commodity Index (SPCI), the NCDEX Commodity Index, the Merrill Lynch Commodity index eXtra (MLCX), the SummerHaven Dynamic Commodity Index (SDCI), and others as discussed in the previous chapter.

These indexes introduced a financially tradable product based on the oil market, which would be essential for the process of financialisation to occur. What is more, the list of the issuing institutions of these commodity indexes is indicative of the financial potential of the oil market. Indeed, one by one, most of the large international financial institutions attempted to enter it; they introduced their own index products and adopted similar structures.

Tracing the impact of these developments onto the oil market requires the use of a reliable indicator of the level of investment, in both financial and speculative terms, made in the oil futures market during the periods under analysis. The most popular indicator among market analysts is the volume of net open positions in the futures. This measure of the level of financial and speculative investment is based on separating the commercial from the non-commercial positions that are considered to be used by traditional financial investors for risk hedging rather than for direct financial speculation.

The US Commodities for Trade Commission (CFTC) collects and publishes data covering all the trades in commodities that take place within the international official exchanges. As a result, they only publish results for CCP trades, but not for OTC trades, with the result that the kind of data published by the CFTC provides a reliable, but limited, indicator of the behaviour in the oil-based financial product market. This limitation is important, since most of the speculative trades take place in the OTC market. The methodology of the CFTC is that each trader, upon completion of each trade, has to mark, first, whether the trade was for a commercial or non-commercial

client[23] and, then, whether the trade was based on a short, long, or spread contract. These data are then published weekly for all the official international commodities exchanges.

Figures 41 and 42 trace the volume of non-commercial and commercial position investments in the WTI NYMEX. Each position represents a contract based on 1,000 barrels of oil. While the distinction between commercial and non-commercial positions is that when investments take place through clearing houses – and in the case of the WTI crude oil, the clearing house is NYMEX – they are explicitly categorised under these two headings. If an investment serves hedging and traditional purposes it is submitted as commercial, whereas if it is a speculative position it is submitted as non-commercial. However, as discussed in previous chapters, only the contracts purchased through clearing houses are recorded in these data, as OTC contracts are not monitored – and, due to their nature, most of them are speculative. Nevertheless, considering that prior to 1992 there were at least four times more commercial than non-commercial positions, it is safe to posit that the speculative investments in the oil market were rather limited prior to the development of these indexes.

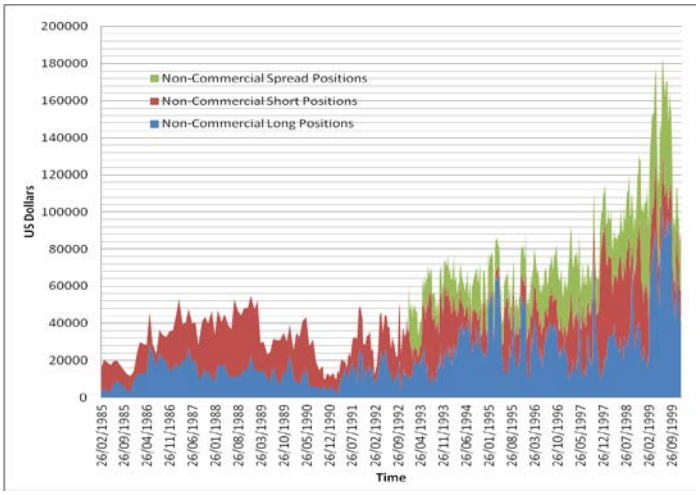


Figure 41-6 Non-Commercial Positions in WTI NYMEX Oil Futures 1985–1999, 1 contract = 1,000 barrels (Bloomberg, 2011)

[23] A list for the classification of the institutions exists, based on their nature. However, in some cases, where a client might be active across different markets, the classification is arbitrary.

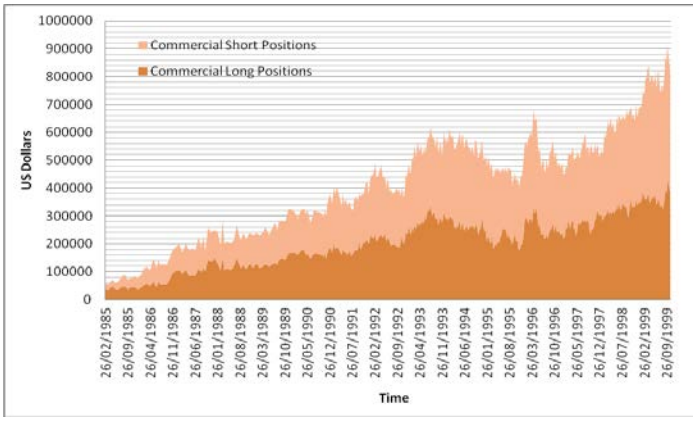


Figure 42-6 Commercial Positions in WTI NYMEX Oil Futures 1985–1999, 1 contract = 1,000 barrels (Bloomberg, 2011)

All this started to change after 1992. After 1992, as seen in Figure 41, a new type of investment became available in the oil market. As the oil commodity indexes were developed in the financial markets, the swap investments, which are considered as being highly speculative investment products (CFTC), became available. The volume of non-commercial positions started increasing gradually and, at the same time, so did its levels of volatility. Commercial positions, too, experienced an unprecedented increase in their volumes over this period. While up until 1990 they were struggling to reach 250,000, in 1999 they exceeded 800,000. It is also interesting to note that the volumes of long and short positions are similar in both commercial and non-commercial investments after the development of the indexes. This breakdown is plotted in Figure 43.

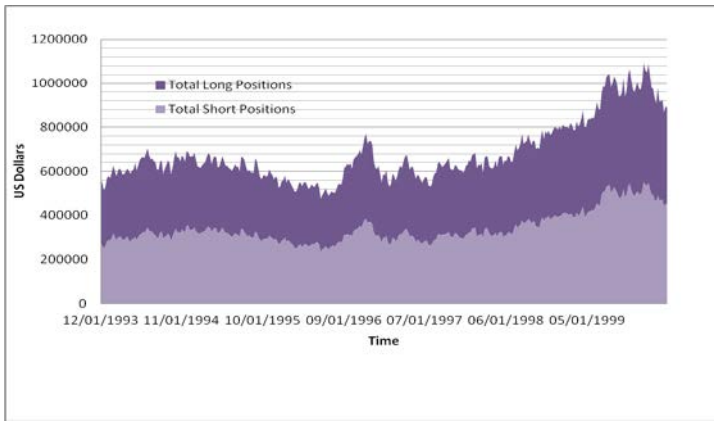


Figure 43-6 Total Positions in WTI NYMEX Oil Futures 1985–1999, 1 contract = 1,000 barrels (Bloomberg, 2011)

The findings above suggest that the emergence of oil-based indexes facilitated the participation of a new type of investor in the oil market who held non-traditional financial interests. They also suggest that, while the purely financial investments quickly caught on with the rest of the market in terms of overall volume, the levels of the traditional long and commercial investments increased as well. Therefore, this period witnessed a general increase in the appeal of the oil market as an investment opportunity, with commercial positions still holding a dominant share in the market.

The same argument can be made in connection to the data on oil futures prices relative to their maturity – typically a breakdown of all the 1-to-5-year futures contracts. The pricing of oil products with different maturity is defined by the current price of oil as well as by the expectations on its future price in order to calculate their potential returns, and thus pricing. When expectations for future returns are positive, the price difference among the 1-to-5-year maturity contracts should increase, as higher expected returns translate to higher present prices. In this case, the factor of risk is also included in the pricing of these products, as shorter maturity products are less risky than long maturity ones.

On the whole, when the expectations for the future returns are negative or uncertain, the price difference between the different futures contracts should decrease, as longer maturities imply higher risks. Figure 44 depicts a reduction in this gap since 1995, along with the emergence of higher volatility. This looks like a pattern: it follows, with a time lag of around 3–6 months, the same trend of oil spot prices, which had risen in 1997 only to fall back in 1999. Therefore, in the post-1995 period, oil started to be considered increasingly riskier as an investment opportunity and more heavily dependent on expectations; both can be explained by the participation of a new type of actor in the market with purely financial motives.

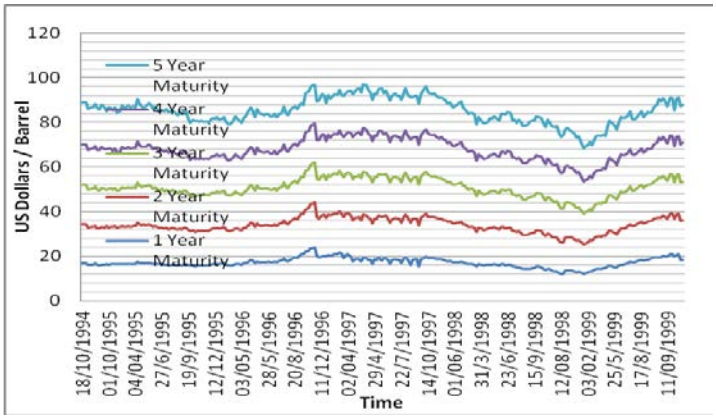


Figure 44-6 Oil Futures Prices Relative to Maturity 1, 2, 3, 4, 5 Years 1994 –1999 (Thomson Reuters DataStream, 2011)

The data plotted in the figures above hold the key to uncovering the roots of the set of processes that are understood in this thesis to underpin the process of financialisation. This is because, the short, non-commercial, and risky investments started becoming more popular amongst purely financially driven investors who were mostly positioned outside the oil market structure. For this reason, this period is viewed as the period of 'early financialisation': throughout its duration, this period laid the institutional foundations that allowed the process of financialisation to penetrate deeper into the structure of the oil market.

Nevertheless, the financialisation of this market did not start taking place before 1992. Even though oil futures had been available since the 1980s, the data suggest that they had not been used until after the crisis of 1991. This means that the 1991 crisis and the oil spike were not related to the effects of financialisation in the oil market. Even so, this is not to say that the oil spike did not spark the aspirations of the financial investors who started flooding the market a year later, after noticing the potential return that oil-based financial products could have under such circumstances.

Since both the US economy and the financial markets were performing well prior to this period, the causes of this crisis must be looked elsewhere. Once the increases in the oil price level started taking place, and the US started deploying military forces in the Middle East, the US economy found itself in a tight corner, since the budget deficit was bound to increase, oil being marketed in US dollars. Therefore, as the oil prices started

rising, fear and uncertainty started to dominate the markets. At the same time, the increased inflation due to both the increase in the oil price and high government expenditure led the Federal Reserve to lower the interest rates in order to avoid pushing the economy into a recession. Yet, this interest rate reduction managed to avoid neither negative growth nor the 1991 recession (Walsh, 1993).

According to Carl Walsh (1993), while the timing of the downturn in July 1990 was undoubtedly connected to the loss of consumer confidence, owing to the events in the Gulf, the US economy was already significantly destabilized prior to these events. This destabilisation of the US economy in the period leading up to the actual recession was caused by the contractionary monetary policy followed by the Federal Reserve, which had attempted to offset the expansionary fiscal factors and to bring the inflation gradually down to zero (Walsh, 1993: 1).

In its attempt to stabilise the economy in a long-term equilibrium, the Federal Reserve, unable to foresee the events of 1990/1, had actually destabilised the economy, by making it weaker and thus more exposed to risks. This argument is backed up by the performance of the consumer confidence index, as depicted in Figure 45, where US consumer confidence dropped from around 120 from the second half of 1989 to about 50 in 1991. It is no coincidence that this crisis was named the 'CNN recession' (Rubini and Setser, 2004a: 11).

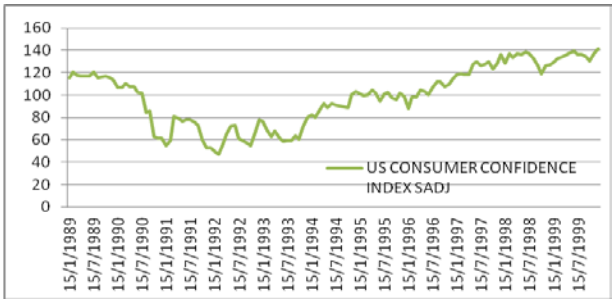


Figure 45-6 US Consumer Confidence Index SADJ 1989–1999 (Thomson Reuters DataStream, 2011)

Therefore, the 1991 oil crisis can be characterised as a purely market-driven crisis, shaped by an oil supply shortage, the effects of which were quickly passed on to an

already particularly fragile US economy. The effect that this oil crisis had on the US macroeconomic performance is explained by the fact that oil was, and still is, marketed in US dollars. This made the value of oil directly related to the US dollar, and vice versa; thus, the value of the US dollar in this period was heavily influenced by the events in the oil market. This was intensified by the large, and growing, budget deficit incurred by the US due to the increased expenditure of the period.

Finally, the deterioration of consumer confidence, due to the events of the period, was also an influence on the economic and financial activity of the period. Nevertheless, even though the financial markets were affected by this crisis, in terms not only of consumer confidence, but also interest rates, inflation rates, saving rates, and consumption, there is no significant direct financial causality that can be traced from the financial performance to the oil market performance and, in turn, the US macroeconomic performance.

The absence of such a link can be explained by the fact that the oil market only emerged as a major financial product a year later. The data presented in this chapter shows that, during the 1991 crisis there was only a fledgling financial dimension to the oil market, which was dominated by traditional investors motivated by security, risk-hedging, and insurance interests. This discussion also shows that this period saw the emergence of an alternative type of investor in this market. Since these investors are motivated mostly by financial and speculative interests, the oil market also witnessed the emergence of different types of positions and investment strategies within its structure.

The emergence of this new type of investor marked the end of ‘small figures’ in the volume of investments in the oil market; during this period, the overall volume of financial positions in this market doubles. This marks the emergence of the financialisation process in the oil market. In this period of ‘early financialisation’, the more traditional, risk-hedging actors gradually relinquished control of the market to investors interested more in financial profits than in the underlying commodity of trade.

7 Low Financialisation (1999–2003)

The turn of the millennium is an important watershed in contemporary economic history, but equally important are the events of the years immediately preceding it. This chapter focuses on the period the surrounds the 2001 crisis, which will be argued to correspond to the phase of 'low financialisation' of the oil market. During this period, the oil-based financial market was already operating under a clear structure, integral to that of the underlying commodity market; however, the existence of restrictive regulations and the absence of adequate technological tools did not allow for its extensive growth before the turn of the millennium.

The final years of the previous millennium were characterised by unprecedented growth in most Western economies, and especially in the US, up to the year 2000. The US economic expansion had lasted for almost a decade since the end of the 1991 crisis and rates, in fact, as the longest registered expansionary period experienced by any industrialised country (Arestis and Karakitsos, 2004, 8). The extent and strength of this expansion can be demonstrated by reference to the US GDP growth levels, which by the end of 1999 had reached 7 percent. The inflation rate, kept at low, stable levels, averaged 2.5 percent during the late 1990s; while the unemployment level reached 3.9 percent, its lowest level since the 1970s, in 2000. According to Temple (2002) even poverty and wage inequality levels had decreased substantially.

It did not take long for this extraordinary economic expansion to spill over into the stock markets. From 1995 to 1999, the US stock exchange Standards and Poor's Composite Index (S&P 500) produced a total return of over 20 percent per annum, including dividend payments, and thus reached a record level in the stock price and earnings ratio for the whole of the twentieth century. The best performers in the stock markets during this period were the stocks of companies in the sector of media, telecommunications, and especially technology.

This performance was mirrored in the Nasdaq Composite Index, which included most of these companies, increasing its level from 2000 in 1998 to 5048 on the 10th of March 2000 (Arestis and Karakitsos, 2004: 18). According to Rima (2002), the stock prices of some of these companies rose by more than 1,000 percent from their initial public offering price. This development created the feeling in the markets that a 'new economy' had emerged after the previous crisis, which was more resilient to shocks, thanks to new rules of operation (Stiglitz, 2003).

This 'new economy' feeling was the result of the transition from a mainly manufacturing-based Western capitalist system into a service- and finance-based economy that was proving received economic truths, such as the Phillips Curve theory, obsolete. The development of novel and advanced technologies throughout this decade had given firms from across most sectors the opportunity to claim that the new technologies had been so transformational that the limitations of the past were quite simply no longer applicable. This led to a sustained increase in stock values across all of these sectors. In many cases these stock gains were completely disconnected from the actual economic value or performance of the firms they represented.

Attempting to capitalise on these positive valuations, an increasing number of very successful IPOs[24] were released during this period (Henwood, 2005). This allowed many firms to raise significant amounts of capital from the markets, which they would have otherwise struggled to raise in the form of debt based on their fundamentals alone. Unemployment and inflation were very low and output levels remained steady and positive, thus creating an optimal economic environment. According to Nesvetailova (2007: 140), however, the underlying economy gave signs of a marked discrepancy between output growth and the increase in the share of profitability. This argument is also shared by actors directly involved in these markets. In a statement published by the trading body of Total Oil, *'several times a year, estimates of market prices on key energy indexes are out of line with the experiences of the day'* (Makan et al., 2013) by as much as the apparent premium that financial products trade on in addition to the value of the underlying product.

[24] Initial Public Offering: the release of stocks of a company in the stock markets for a public flotation.

As stock returns rose, and remained stable, unprecedented profits were being made in the stock markets, and especially in the technology sector, in such a loud trend that it quickly became common knowledge. Not surprisingly, massive inflows of capital entered the stock market in the direction of those shares. This resulted in an even higher rise in their prices, which generated the inflation known as the dot-com bubble (Krugman 2009; Laffey, 2006).

Figure 46-7 US Consumer Confidence Index SADJ 1995–2003 (Thomson Reuters DataStream, 2011)

Figure 46 illustrates the effects that this 'new economy' euphoria had on the public. The US consumer confidence index for this period shows that since the end of 1996 confidence levels steadily increased to reach, in 1998 and 2000, a value almost 40 percent higher than in 1996. The durable goods markets boomed as a result of this bubble, with increased profits spilling over to other markets as well. Blind to the sustainability of this situation, everyone seemed to throw all hesitation to the wind for the sake of more profit (Arestis and Karakitsos, 2004: 22). Both per-capita income and consumption levels experienced an unprecedented increase in the period leading up to 2001. By earning and spending more, all the economic and financial participants in the US economy contributed to a positive reinforcement cycle – and to the inflation of the bubble.

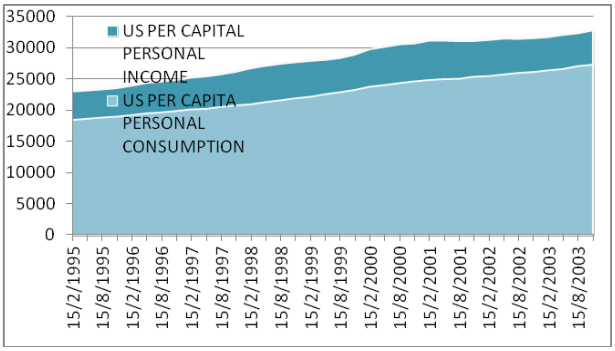


Figure 47-7 US Personal Income and Consumption 1995–2003 (Thomson Reuters DataStream, 2011)

According to Shiller (2005), the dot-com bubble, and the euphoria that surrounded it, had created a mania. On top of this, financial innovation had started to peak during 2000 and 2001, when several US energy and electric utility companies, the most famous of them being Enron, started to engaged in derivatives (Hughes et al, 2008). Additionally, this positive environment was also sustained by the lowest price levels in the oil market since the 1970s, which reached just over $10 per barrel after the 1992 oil price spike. At the same time, George W Bush Jr. won the 2000 US presidential elections and, upon taking his post, set out to fulfil his electoral promises of lower taxation.

The Federal Reserve started to express concern in 1999 that the growth levels experienced by the US economy would be unsustainable in terms of future inflationary consequences, and that 'corrosive inflation' was soon likely to set in (Greenspan, 2008: 207). High growth levels indicated that the expansionary leg of the cycle was peaking out and that inflationary pressure would soon take over. The Federal Reserve resolved to increase interest rates in order to slow down growth and steer clear of any inflationary pressures, thus prolonging the boom. Their initial increase was not met by the expected reaction of the markets, but they believed that this reaction was typical of economic actors who were adjusting to the new conditions (Greenspan, 2008: 207). As a result, the Federal Reserve decided to raise the rate even higher, up to 6.5 percent (Arestis and Karakitsos, 2004: 22).

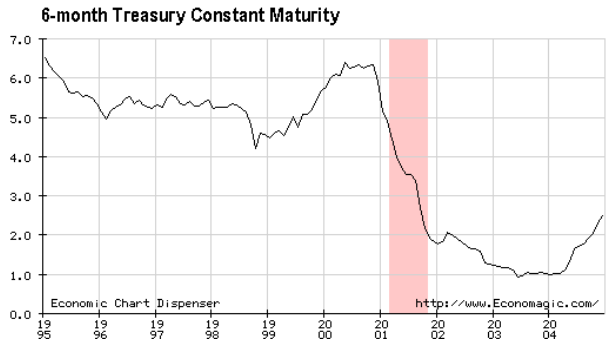


Figure 48-7 US 6-Month Treasury Bills 1995–2003. Pink area = Recession (Economagic, 2011)

However, the reaction of the markets to this last interest rate increase was not the one desired by the Federal Reserve, as the economy started decelerating sharply and continuously. The US economy fell into a recession in the beginning of 2001 and the confidence that had been built up in relation to the 'new economy' evaporated as the dot-com bubble started to deflate, creating huge debts and defaults in its wake (Rima, 2002: 407–414). The stock markets crashed, leading to a loss of about 40 percent of their average value (Krugman and Obsfeld, 2006: 147). This turn of events alarmed the Federal Reserve to the point of veering towards expansionary policies of low interest rates in an attempt to put an end to the recession. Between 2001 and 2003, the Federal Reserve announced 13 reductions in the interest rate, along with the introduction of additional expansionary fiscal measures on the part of the government. The budget surplus achieved towards the end of this decade of expansion was now very quickly turning into a deficit (Arestis and Karakitsos, 2004).

At this point, production slowdowns took place across the US economy; most firms announced lower corporate profit estimates; unemployment pressures started to creep in; and inventories started to pile up due to an increasing deficit in demand (Greenspan, 2008: 207). Consumer confidence was now severely hit; the levels of industrial production suffered as a result and fell by 5 percent (Greenspan, 2008: 225). The manufacturing sector attempted to respond to these effects by cutting down production levels, shedding labour, and minimising investment levels. Even with these measures in place, the corporate sector was unable to witness any reduction in the levels of accumulated stocks; with the inventory-to-sale ratio increasing and sales continuing to

fall, production was being cut across most sectors of the economy (Arestis and Karakitsos, 2004: 22). For this reason, this recession is also referred to as 'the inventory crisis'. Defaults became a worldwide phenomenon: only in 2001, 216 companies defaulted on US$116 billion of debt, a trend that continued in 2002. What is more, even 25 large US companies filed for insolvency (Nesvetailova, 2007: 141), which proved that this crisis did not only affect dot-com firms and small-to-medium enterprises.

At the same time as these events were taking place in the US economy, developments in the oil market were affecting the international economies. Hugo Chávez was elected in 1998 as the president of Venezuela. In the years preceding Chávez election, OPEC had lost most of its former glory, as members frequently ignored the agreed quotas with the result of a dive in the price of oil and the economic boom of the 1990s. In 1999, within the first one hundred days in power, Chávez succeeded in taking control of the oil market and increasing the price level by $5.19 per barrel. Later in the same year, he achieved further increases through supply restrictions (Bamberger, 2000; Rodríguez, 2002: 204).

Figure 49-7 Nominal Price of Crude Oil 1995–2004, US Dollars (Bloomberg, 2011)

Figure 49 depicts the 200-percent increase in the spot price from the end of 1998 to the end of 2000. In 2000, the spot price of oil reached $30 dollars per barrel, forcing the release of a major portion of the US Strategic Petroleum Reserves in an effort to fend off the negative effects of this increase (New York Times, 2000). This decision helped to temporarily lower the price level of oil in the US economy; however, the events that followed cancelled out the positive effects of this release. The combination of high oil prices, increased interest-rate levels, and the gradual descent of the budget surplus into a

deficit put an end to the euphoria of the previous decade as the economy fell into a crisis.

The US economy, being the biggest importer of oil internationally, is very vulnerable in its macroeconomic performance to changes in oil price. In the year 2000, according to the EIA database, the US was importing 11,459 thousand barrels of oil per day, which, considering the $20 increase in the price of crude oil from 1999 to 2000, accounted for approximately $230 million more paid every day by the US for their crude-oil import needs. Higher oil prices lead to higher budget deficits. This effect, which is multiplied by the marketisation of crude oil in US dollars, implies that any increase in the price of oil will also lead to a devaluation of the currency, and thus an even greater negative effect for the US economy.

It follows that the price level of the oil market has been very important for the economic performance of the US during this period. However, the question remains on what was the role of the financialisation of the oil market in the first crisis of the new millennium, and how it affected its development. Prior and during the course of this oil shock, a number of developments took place which likely affected the course of the financialisation of the oil market and have to be studied in order to understand the extent, depth, and effects of this process.

The technological developments of the period also greatly affected the oil market and its financialisation, especially through the introduction of the Internet in its structure. In 1999, oil futures and options became available for trade to any individual. Entry to the market had never been easier: trading oil-based products now only required a subscription to a trading website. This was a very important development for the financialisation of the oil market as, up to that point, it was very hard and almost impossible for an individual to trade directly in oil-based financial products. That they are now accessible to individuals across the globe has widened, the market of these products on both a geographical and demographic level, thus further intensifying the financial aspect of the oil market.

The second major development that occurred in this period and that allowed for the intensification of the financialisation effects in the oil market was the Commodity Futures Modernization Act of 2000 (CFMA). The CFMA of 2000 was approved by the US Congress on the 15th of December 2000, and signed into law six days later by the former US President Clinton. This act effectively deregulated all the new oil-based financial products, such as the oil futures, options, and swaps. It achieved this by marking a number of OTC derivatives as off the CFTC jurisdiction and therefore allowing financial actors to take advantage of this loophole and trade these products through the OTC markets, out of the reach of CFMA regulations. More specifically, the CFMA Regulation Revisions Act states that the purposes of the revisions were:

1. to reauthorize the appropriation for the Commodity Futures Trading Commission;

2. to streamline and eliminate unnecessary regulation for the commodity futures exchanges and other entities regulated under the Commodity Exchange Act;

3. to transform the role of the Commodity Futures Trading Commission to oversight of the futures markets;

4. to provide a statutory and regulatory framework for allowing the trading of futures on securities;

5. to clarify the jurisdiction of the Commodity Futures Trading Commission over certain retail foreign exchange transactions and bucket shops that may not be otherwise regulated;

6. to promote innovation for futures and derivatives and to reduce systemic risk by enhancing legal certainty in the markets for certain futures and derivatives transactions;

7. to reduce systemic risk and provide greater stability to markets during times of market disorder by allowing the clearing of transactions in over-the-

counter derivatives through appropriately regulated clearing organizations; and

8. to enhance the competitive position of United States financial institutions and financial markets.

This development affected the financial aspect of the oil market in two distinct ways. First, it provided investors with room for financial innovation as well as a loophole to trade in this market free from regulations. In other words, in the attempt to provide more stability in the market, this act allowed for a larger volume of capital to enter the market and to be traded more actively. The second is a side effect of this development. As OTC trades are not recorded the same way as traditional trades, and therefore cannot be accurately quantified, the increased activity in the OTC markets after the introduction of this act cannot be assessed precisely. Therefore any calculation of the oil futures market after 2000 overlooks the parallel OTC market, which is effectively entirely discounted in their values.

The third development was the abolition of the 'prudent investor' rule, which was replaced by the Uniform Prudent Investor Act (UPIA) in 1994. The 'prudent investor' rule, or 'prudent man rule' was a legal doctrine that enjoined financial actors who invested with third-party funds to consider the needs of their beneficiaries and to act in a prudent and diligent way. In other words, it required them to avoid excessive risk in their investments by adopting very conservative investment strategies. What is more, it stated that the final result did not justify in any case the original intent of the investment (Einloth, 2009). This meant that financial institutions such as pension funds, hedge funds, and banks, could not engage in the oil futures market as this would amount to investing funds not belonging to them on a known high-risk market (Masters and White, 2008).

The UPIA regulation that replaced the 'prudent investor' rule did not offer a revision of the existing regulation but, instead, offered a new regulatory approach. Under the UPIA approach, investors could focus on the portfolio as a whole, and its interplay between

risk and reward, without the obligation of any restrictions or separations between safe and risky investments. Under the UPIA, investing institutions establish the level of risk that they are willing to take and then map out an investment strategy for their portfolio, with the only proviso that they should be able to explain the rationality of the strategy and the prudence of each investment as it relates to the whole portfolio (Maloney, 1999). According to a study that employed federal banking data spanning from 1986 to 1997, the adoption of the new 'prudent investor' rule caused an increase of about 1.5 to 4.5 in the average percentage of risky investments held in the portfolios of financial institutions, at the expense of safe investments (Schanzenbach et al., 2009). The authors concluded that the adoption of the new 'prudent investor' rule had a significant effect on trust asset allocation.

The abolition of the 'prudent investor' rule also opened the doors to a wide variety of investment products that had been introduced, or come into the mainstream, since 1959. If in 1959 there were 155 mutual funds with nearly $16 billion in assets, these figures had already grown to 10,725 and $6.9 trillion respectively by the year 2000 (CDA/Wiesenberger). As a result of this development, financial institutions such as pension funds and hedge funds (Tang and Xiong, 2009), now controlling an increased amount of capital in the markets, were able to add oil-based financial products to their portfolios and thereby increase the inflow of capital in the market as well as the number and influence of its participants.

Those three developments shaped the financialisation of the oil market to a great extent, marking at the same time the turn of the millennium as one of the most important period in this process. Both the large financial institutions, such as banks, hedge funds, and pension funds, and small independent investors could now enter a largely unregulated market with unprecedented ease thanks to the abolition of most restrictive regulations and the introduction of Internet-based exchanges. The result of this opening was a large inflow of mass capital from the financial institutions as well as from individual investors, but also an increase in the volatility levels of the market, as this capital was, by nature, much more active. This is because this new capital was much more active in nature due to the fact that the new investors that had now come to participate in the

market were rarely, if ever, more interested in the delivery of the final product, than in its sole financial yield, and had thus taken to trading these products continually prior to their expiration in order to avoid the issue of delivery.

The performance of the oil-based financial market in this period, as illustrated in Figures 50 and 51, is characterised by a double spike in the volume of the non-commercial positions, partly mirrored in that of the short commercial positions, which starts in 1999 and ends at the beginning of 2000. The end of 2000 witnesses a new wave of inflation on the volume of all types of investments, which lasts up until the first months of 2001 when the rise becomes more linear and sustained. The performance of these products is in line with the performance of the oil spot prices, and fully reflects the economic, financial, and political developments of the period.

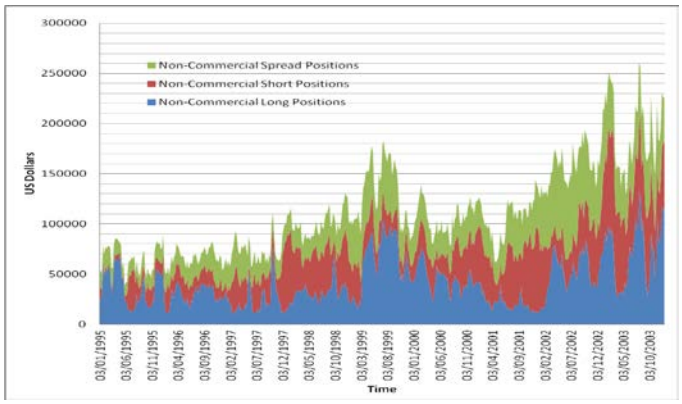


Figure 50-7 Non-Commercial Positions in WTI NYMEX Oil Futures 1995–2003, 1 contract = 1,000 barrels (Bloomberg, 2011)

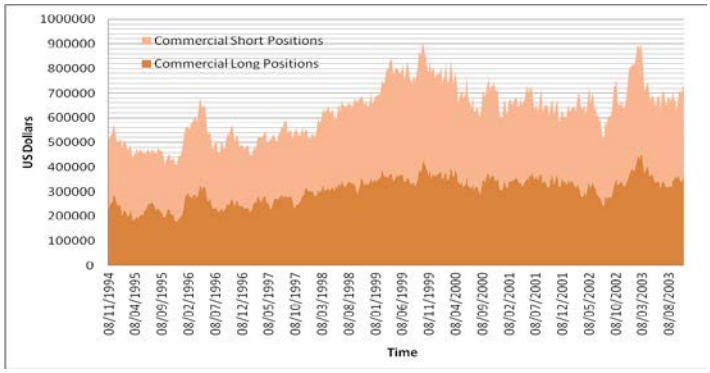


Figure 51-7 Commercial Positions in WTI NYMEX Oil Futures 1995–2003, 1 contract = 1,000 barrels (Bloomberg, 2011)

The oil spot price, as discussed in previous chapters, starts its inflationary path at the beginning of 1999 and spikes at the beginning of 2000 and again at the end of 2000, when it starts deflating. The volume of the oil futures market experiences inflationary pressures from 1997 until the beginning of 2000 (Figure 50). From the end of 2000 up until the end of 2001, when they reach their lowest points, both the spot oil price and the volume of financial oil positions follow a gradual and volatile downward path.

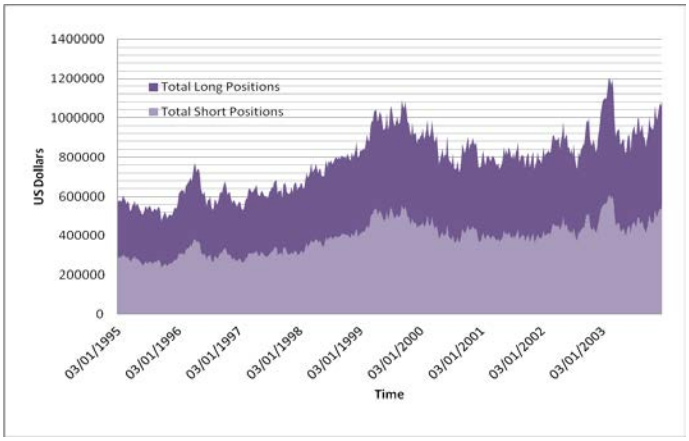


Figure 52-7 Total Positions in WTI NYMEX Oil Futures 1995–2003, 1 contract = 1,000 barrels (Bloomberg, 2011)

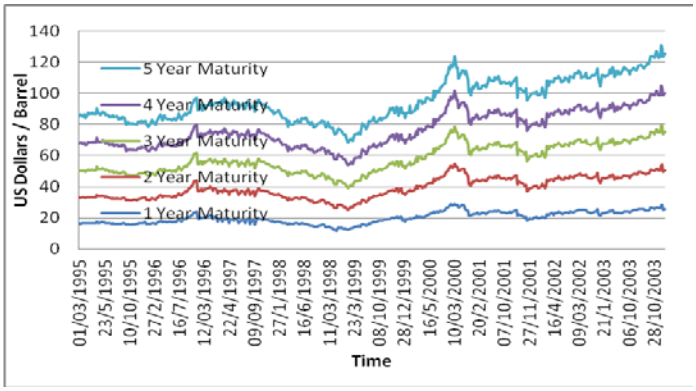


Figure 53-7 Oil Futures Prices Relative to Maturity 1, 2, 3, 4, 5 Years 1995–2003 (Bloomberg, 2011)

Figure 53 solidifies this argument by tracing the performance of oil future products according to their maturity length. In 1999 the price of the five-year maturity products drops substantially and its gap with the one-year maturity products shrinks. This means that market expectations of the price of oil were negative. On the contrary, after 1999 this gap grows substantially, nearly doubling in size towards the end of 2000, which

implies that the market expected oil price to keep on rising. As the price of oil starts its deflationary course at the end of 2000, the price of the five-year maturity products declines compared to the one-year maturity products. What is more, after a slight loss of value, lasting for about twelve months, they start a gradual inflationary trend similar to that of the oil spot price and the volume of futures investments.

There are a number of factors that affected actor expectations in the period. Among them are the terrorist attacks of September 11th on the US in 2001 and the subsequent decision to invade Afghanistan; neither had any boosting effect on the confidence levels of this period. The military activities did not affect oil production much, as Afghanistan is not one of the major oil producers, nor did it affect oil distribution to any significant extent. However, the price of oil did start to soar after the end of 2001. The reason behind this increase was the expectation of higher oil prices. Just when the regulatory and technological advances were accelerating the process of financialisation in the oil market, the military operations in the Middle East were driving actor expectations in the direction of higher oil prices, which raised demand for oil futures and, along with, speculation opportunities.

However, it is important to point out that even though the performance of the futures products was synchronised with the performance of the oil spot price, its reactions to it are much milder. This is even more apparent when considering that the loss of value of the spot market after 2000 was more that 50 percent of its peak price, while the loss of value in the five-year maturity contracts, which were the most widely affected, was less than 17 percent of its peak price. The synchronization of the futures prices with the oil spot prices, as well as the speed and extent of reaction, is central to the study of financialisation. This is because, according to the theoretical framework of financialisation outlined in previous chapters, the two markets developed a performative cycle between them driven by actor behaviour. Therefore, with the increase of financialisation, and the consequent rise in the number of actors, markets, institutions, and products, this performative cycle should be observed as an increase in the speed and extent of the synchronization of the financial product and physical commodity prices.

The performance of the oil-based financial products since 1998, and up to the peak of this shock in 2000, follows the performance of the oil spot price. This indicates that they were shaped by expectations influenced by the performance of the oil spot prices as well as by the major events of the period. As the three main developments that facilitated the financialisation of the oil market in this period – namely the end of the 'prudent investor' rule, the introduction of Internet-based trading, and the CFMA regulations – had not yet taken place, or were just being introduced, their influence over the performance of these markets only started during the dying embers of the 2000 oil shock. The decoupling of the oil-based financial products from the oil spot price in the post-2000 period, which is responsible for allowing the futures products to retain most of their value while oil spot prices plundered, can be attributed to these developments.

It is worth noting, at this point, that the levels of spare capacity announced by the OPEC in this period were actually increasing (Figure 54); this contradicted the argument that a supply shortage was causing this increase in the oil price level. This also confirms the notion that it was the expectations and behaviour of financial actors that were influencing the oil spot price, as the market fundamental forces of demand and supply had not yet been affected.

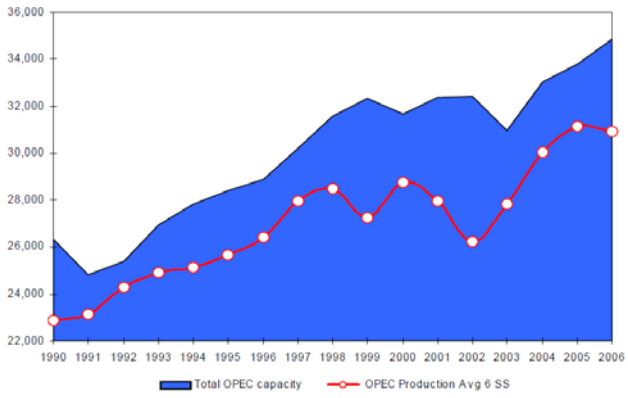


Figure 54-7 OPEC Capacity and Production of Oil (OPEC, 2007)

Figures 55-58 study the effects that the 2001 crisis had on the performance of the US macroeconomic indicators. The US gross domestic product decelerated and even reached negative growth values in 2001. The inflationary pressures in the economy

increased, although not to unprecedented levels – they reached 3.5 percent in 2001 compared to the less than 2 percent of 1998. Even though this was a more than a 50-percent increase, 3.5 percent is not generally considered a dramatic increase in inflation rates, especially during an economically turbulent period. The unemployment rate, on the other hand, increased both sharply and extensively in 2001, with insolvencies and cost cuts affecting the employment levels nationally.

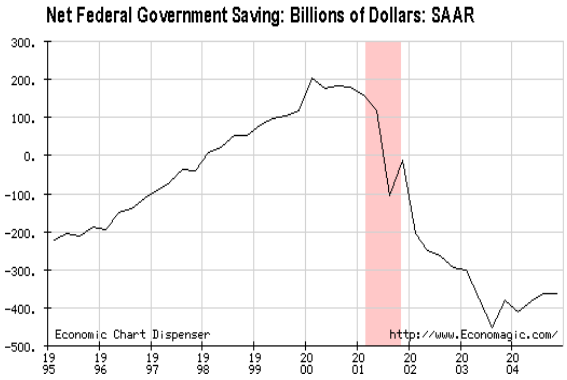


Figure 55-7 US Federal Budget 1995–04, pink area: recession (Economagic, 2011)

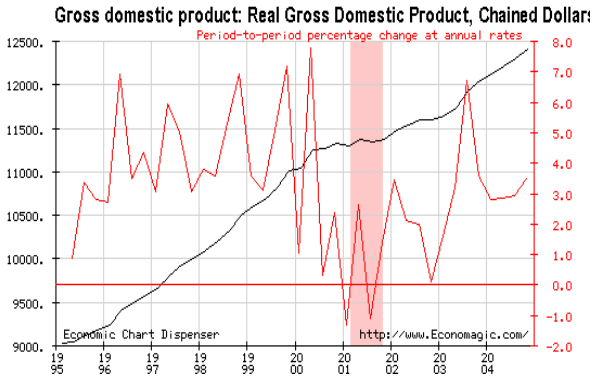


Figure 56-7 US Gross Domestic Product 1995–04, pink area: recession (Economagic, 2011)

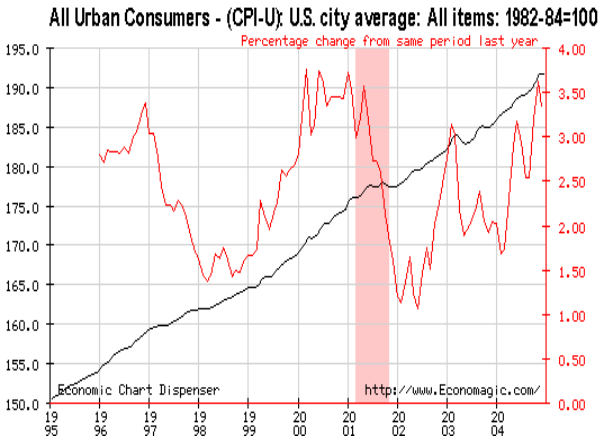


Figure 57-7 US Consumer Price Index 1995–04, pink area: recession (Economagic, 2011)

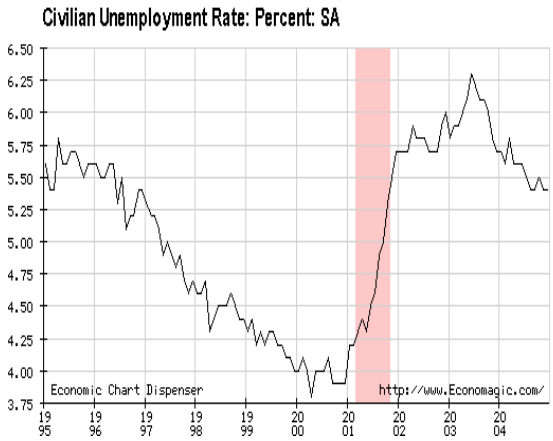


Figure 58-7 US Unemployment 1995–04, pink area: recession (Economagic, 2011)

The US economy fell into an official recession in the early 2001. The US stock market followed an almost identical path to that of the macroeconomic performance. Figure 59, below, depicts the SPX index collapsing from March 2000, where it had picked at

US$1500, to less than US$800 in March 2002. The same trend can also be observed in all the main macroeconomic indicators of the period (Figures 55–58), but with a time lag of about 3 months, which supports the idea that the downturn in the macroeconomic performance followed the crash of the financial performance and of the dot-com bubble. Nevertheless, the performance of some macroeconomic indicators from shortly before 2001, such as the increase of inflation, the deceleration of the GDP levels, and the increase of the deficit, leave the debate still open over the possibility that not all these effects were a result of the financial crash and that other factors also contributed to the crisis.

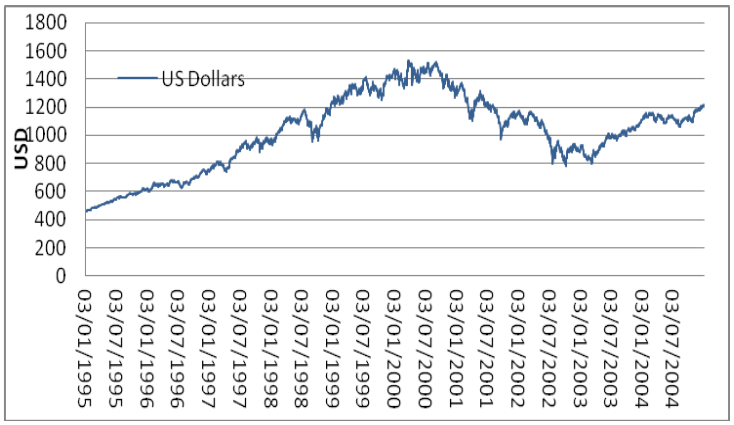


Figure 59-7 SPX Index US Dollars 1995–2004 (Bloomberg, 2011)

Figure 60 shows the weighted value of the US dollar against major international currencies to illustrate the effects of the crisis on its exchange rate. The chart shows a downward pressure in the value of the US dollar from 1999 up to the mid-2000, when it started rising again until the beginning of 2002, when it started losing considerable value. Even though the US dollar seemed resilient, until 2002, to the pressures of the large budget deficit, the economic recession, the financial crisis, and the increased oil prices, in 2003 it started losing value abruptly. This negative trend persisted through to 2005; this means that the effects of the crisis on the exchange rate were experienced with a lag of almost one year and were sustained for a long period.

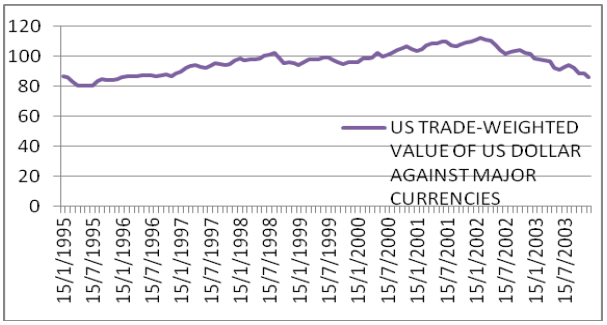


Figure 60-7 US Dollar Trade Weighted Value against Major Currencies 1995-03 (Thomson Reuters DataStream, 2011)

The effects of the burst of the dot-com bubble were not contained in the financial markets. Actually, the effects of this burst were very quickly passed onto the macroeconomy. The increased levels of GDP growth and the Consumer Price Index along with the very low unemployment levels up until the beginning of 2001 illustrate the positive effects of the bubble.

The interest rate policy of the US, and the general tax-cutting policies of the period, played a central role in the inflation and subsequent burst of this bubble. This is because, as soon as interest rates reached their highest level of 6.5 percent, the volume of financial activity first stabilized and then fell along with the federal budget six months later, dragging the rest of the economy into a recession. Robert Hall (2004) and Oliver Blanchard (2008), among others, argue that cases of this kind are often correlated with a loss of consumer confidence.

This conclusion raises the question of how the above developments influenced oil futures pricing. On the one hand, the macroeconomic downturn of the US, as a result of the dot-com crisis, the rising oil prices and the September 11th attack, led to a crash of the US stock markets and a loss of confidence. On the other hand, the military activities that took place in the Middle East acted as an indicator that any investments in the oil market would be profitable, especially since the asset markets were underperforming and the oil-based financial products had proven to be a good alternative to asset markets and inflation pressures (Tang and Xiong, 2001; EIA, 2012).

In light of the very recent development of the infrastructure of financialisation, investments in the oil market became both appealing and accessible. Thus, the indicators of the performance of oil-based financial products dropped marginally and, for a short period of time after the peak of 2000, rose up again as investors started to inject their investments into the oil market. Notably, oil-based financial products started their upward path from the end of 2001, at the same time as a surge in non-commercial positions, whereas the SPX index did not recover from this crisis before the end of 2002 – a path followed by most US macroeconomic indicators.

The effect of the dot-com bubble on the positive performance of the sector, as well as on the whole of the US economy prior and after the 2000 period, is depicted in Figures 61 and 62. Specifically, Figure 61 plots the US total GNP alongside the GNP produced by the finance, insurance, and real estate sectors and shows a deceleration of the total GNP in 2000. This kink, however, is not replicated in the GNP of the FIRE sector, which continued to grow as before. This finding contradicts the pattern observed in Figure 62, which shows an observable deceleration in the growth of the level of US employment in the financial after the end of 1999. This contradiction implies that in this period, despite decelerating employment in the financial activities and the crash of the dot-com bubble that depressed the stock markets until the end of 2002, the financial sector was still able to continue generating growth comparable to the pre-2000 period. How did this sector manage to achieve these levels of growth while suffering from the effects of a crisis?

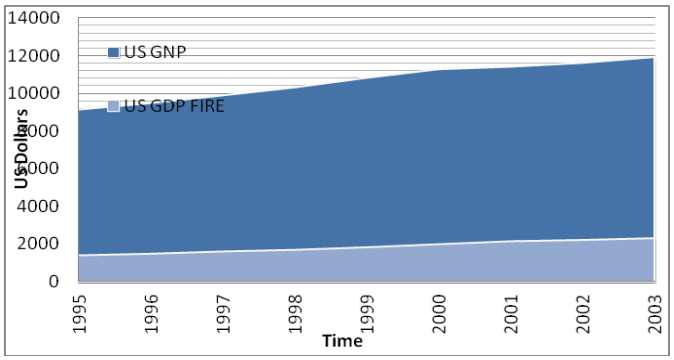


Figure 61-7 US Total GNP and FIRE (Finance, Insurance and Real Estate) GNP 1995–2003 (Thomson Reuters DataStream, 2011)

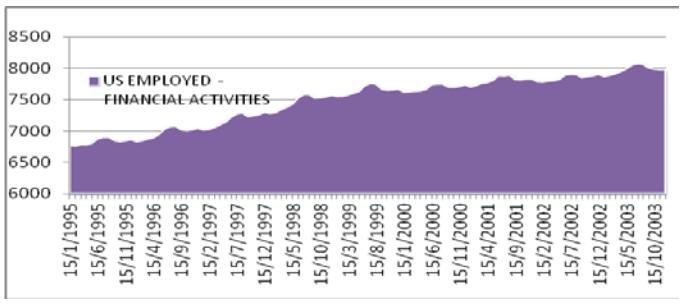


Figure 62-7 US Employment in Financial Activities 1995–2003 (Thomson Reuters DataStream, 2011)

The financial sector's increasing returns at a time of financial turmoil can be explained by the fact that financial investors turned away from the asset markets towards the oil and housing markets. However, since the real estate bubble did not come into play until later on in this period, the initial outflow of capital from the asset markets turned mostly to commodities markets, and more specifically the oil market. Even though a restriction in the levels of oil supply did not actually take place, nor did a sustained pressure towards an increase of the oil spot price by OPEC, the oil spot price never returned to its 1998/9 levels while oil-based financial products kept growing both in value and popularity after a marginal drop in the end of 2001. This marked a new era in the financialisation of the oil market.

This new era, in the context of this thesis, is defined as the period of 'low financialisation'. This is because the oil-based financial markets had already grown significantly in size to influence the development and effects of this oil shock into the financial markets and the real economy. The existence of tight regulations and the complexity of the market were still barriers for large financial institutions and for the development of financialisation more generally; at the beginning of this period, however, the kind of financial innovations launched by the likes of Goldman Sachs allowed the products of this market to infiltrate a wide number of portfolios of both financial and individual investors, thereby setting the ground for the boom in this market after the turn of the millennium. This boom took place through a number of regulatory and technological developments, which opened the oil-based financial markets to a wider geographical and demographic array of investors.

This process accumulated momentum in spread and influence as regulatory and technological developments across the industry facilitated access of new financial capital. These developments were not driven by a single interest, or group of interests, in the market, but by actors' haphazard attempts to maximise their own profitability. In this sense, the introduction of Internet trading was the result of the exchanges moving towards increased efficiency; indexes were a result of Goldman Sachs' attempt to create and promote a new product; the abolition of the 'prudent investor' rule was one of many deregulatory moves not specifically targeted at the commodity markets. Hence, the periods of early and low financialisation denote a process that, once the first oil-based financial products are introduced, has been shaped by the drive of each single actor involved in it to increase their own profitability both across the market spectrum and within the structure of this market specifically.

8 Advanced Financialisation (2002–2008)

The 2008 international financial meltdown has been variously characterised as a ‘unique crisis’, an ‘unexpected crisis’, a ‘crisis of capitalism’, a ‘credit crunch’, a ‘liquidity crisis’, a ‘subprime crisis’, the ‘great recession’, a ‘bubble’, and even the ‘new great depression’ (Akerlof and Shiller, 2009; Bellamy and Magdoff, 2009; Hardoubelis, 2009; Shiller, 2005). The common understanding of the 2008 crisis is that in 2007 a bubble in the US housing market broke as a result of the proliferation of subprime mortgages, which were being used in the formation of synthetic financial products, and caused the collapse of the financial market (Akerlof and Shiller, 2009; Bellamy and Magdoff, 2009). The reduced capacity of banks to absorb this burst was mainly due to the kind of insufficient funds, risky activities, and enormous short-term lending that they had hitherto engaged with. This unexpected shock in the international financial system led to a crisis of confidence, mainly towards the credit organisations that used short-term lending as their main source of financing and, in so doing, left themselves open to a liquidity crisis (Akerlof and Shiller, 2009).

It did not take long for the effects of the financial crisis to trickle down to the macroeconomy. Initially the unwillingness of credit institutions to grant loans, on account of their degree of underperformance due to increased mortgage default rates, created liquidity problems across the markets. Secondly, the crisis caused the evaporation of a great share of the international household and corporate wealth, as many people lost large parts of their investment capital either through institutional defaults, the crash in the financial markets, or the loss of real-estate investment value. Following from this, the levels of international trade collapsed, as the lower levels of consumption in the most widely affected economies – also the world’s biggest import economies, i.e. the EU and the US – led to increasing unemployment pressures (Akerlof and Shiller, 2009; Bellamy and Magdoff, 2009).

No reaction from the international stock markets was forthcoming until the early 2008, which seemed to vindicate the argument that a decoupling of the international financial markets from the US economy had indeed taken place. Nevertheless, the downward rally of the international stock markets from January 2008, which lasted for about fifteen months, proved otherwise. Notably, the fall of financial corporations, which was the central market of this crisis, was much wider than that of all the other sectors. In 2009, the international economies were faced with the biggest recession of the post-war period. It is remarkable that up to 2007 economists and analysts were proud for achieving sustainable high rhythms of world growth, combined with low inflation.

Figure 63 depicts demand for employees in the financial sector during the run up to 2007/8 rising by more than 15 percent in order to cover the growth of its activities. This rise, not surprisingly, ends at the beginning of 2008 when the levels of employment in this sector plummet to below that their pre-bubble levels. In an opposite trend, even though the crisis hit the financial sector, and even though the employment levels of this sector dropped significantly, its percentage in the total annual GNP composition remained stable and even increased during this crisis (Figure 64) because the sector was flexible enough to find ways to remain profitable.

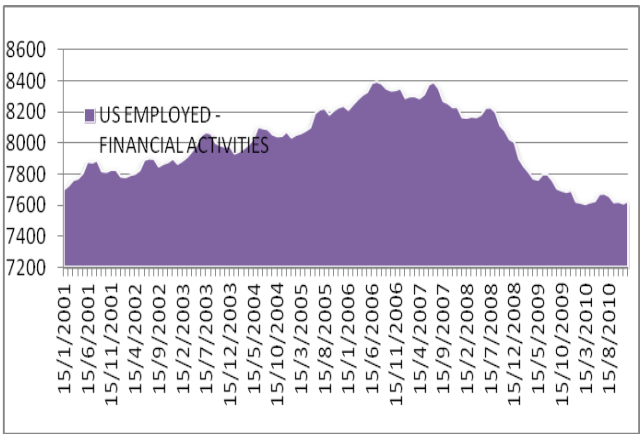


Figure 63-8 US Employment in Financial Activities 2001–10 (Thomson Reuters DataStream, 2011)

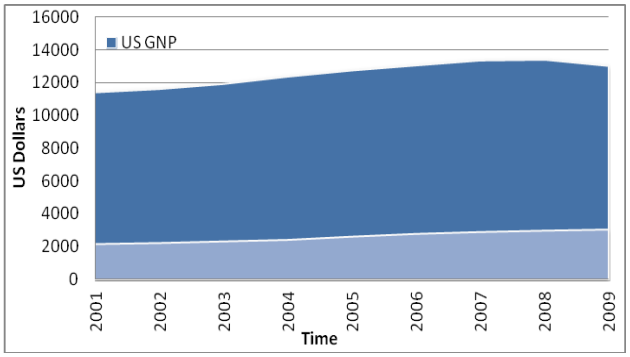


Figure 64-8 US Total GNP and FIRE (Finance, Insurance, and Real Estate) GNP 2001–10 (Thomson Reuters DataStream, 2011)

Cheap money, excessive liquidity, and very low real interest rates shaped international imbalances through saving and investment activities and acted as the drivers of this crisis (Caballero et al., 2008; Portes, 2009). These imbalances were fuelled by the high deficit of the US and low real interest rates which inflated the bubbles that existed in the real estate market and the complex financial products. The housing market bubble in the US started in 2001, when the real estate prices began rising, and, despite puzzling a large number of analysts, was left free to expand uncontrollably (Hardouvelis, 2009). Conversely, other analysts claimed that the rise of the housing market was caused by a rise in the quality of the residences (McCarthy and Peach, 2004; 2007).

In addition to the expansionary monetary policy, the US was engaged in a very costly war in the Middle East and maintained a large number of troops in the region. The increased budget deficit observed above in relation to the period of 'low financialisation' was maintained through the high costs associated with this war, which however boosted the productivity of the US automotive and military industries and reduced the unemployment levels.

Against this background, in 2007 things started to change. A deceleration in the growth of the housing-market prices started in mid-2006, with prices falling in 2007. This drop led to delays in mortgage payments and many households leaving properties that were suddenly worth less than the mortgages they commanded. This intensified the effects of the crash as properties began flooding the market, pushing their prices even lower. The reduction of household wealth, along with the unfavourable financial environment, led

to even more defaults in the remaining mortgages, thus further decreasing the available funds on which many advanced financial products were based.

In February 2007, the new Federal Reserve Chairman Ben Bernanke stated that the growing number of defaults in the payments of mortgages would not seriously affect the US economy. However, it was not long before trouble reached major Wall Street firms, such as Citigroup, Merrill Lynch, Goldman Sachs, and JPMorgan Chase. To make things worse, in September Northern Rock, a UK bank, was irreparably hit by the crisis and asked for assistance from the Bank of England. Depositors, fearing the loss of their funds, withdrew one billion pounds in what was soon turning into a bank run before the UK government intervened with a guarantee of depositor savings.

In March, Bear Stearns, the fifth largest investment bank in the US, collapsed. A few weeks later, Fannie Mae and Freddie Mac were effectively nationalized by the US Treasury. At this point, the International Monetary Fund (IMF) announced that the potential cost of this crisis could surpass one trillion dollars (IMF, 2008), claiming that a spill-over effect was taking place from the subprime mortgage markets to the other sectors of the economy and the financial markets. In September, Lehman Brothers, one of the largest and most successful financial services firms, filed for bankruptcy after the US government denied it a bail-out o avoid giving all the wrong signals to the markets. The stock markets plummeted, as confidence was lost, while investors and partners of Lehman Brothers lost their funds.

The collapse of Lehman Brothers, even though it was not the first firm to get hit by the crisis, was particularly significant because it demonstrated that even firms deemed ‘too big to fail’ were, in fact, failing. Large banking institutions were struggling to survive in such a negative financial environment, but were still in a better position than many unregulated institutions, such as hedge funds, who had engaged in high-risk investments without any form of restriction and were now suffering extensively as a result of it. Negative expectations, reduced liquidity, faltering demand levels, crashing markets, and the strict application of the no-bailout policy by the US government meant that there was no alternative for many such institutions than default.

The US consumer confidence index dropped to the record low level of 28 points. This was the lowest value that the consumer confidence index had reached since the Conference Board began tracking consumer sentiment in 1967. Their confidence lost, and in fear of increased risks, investors retracted their capital from developing and high-risk countries, thus spreading the effects of the crisis to countries with undeveloped financial markets. Against this background, on Monday 1st December 2008, the US economy officially entered an economic recession, after a contractionary path started in December 2007.

The financial crisis and its effects on the macroeconomic performance also affected the levels of international trade. According to Freund (2009), during the four post-war recessions, international trade dropped by 4.8 times more that the world GNP. Evidence for the first half of 2009 illustrates a much bigger drop, one that exceeds 14 percent of the world GNP. The causes for this drop according to research were the composition of the international trade and the globalisation effect (Baldwin, 2009). The recession, along with the feelings of uncertainty and insecurity, stirred a reduction in consumption and, in turn, production.

Against this background, after the attacks on September 11th, the US and a few of its allies, initiated a military attack against Iraq[25]. Even though this was expected to be a short and cheap war (Stiglitz, 2008), this turn out not to be the case. Absent an official figure, there are many credible estimates of the total costs of a war. Joseph Stiglitz argued that by the end of the Bush administration the total cost of the military activities in Iraq and Afghanistan, taking under consideration the cost of the cumulative interest on lending that was employed to ensure their funding, surpassed the US$3 trillion figure (Stiglitz, 2008). Figures of this sort are particularly striking considering that the White House expected the war to cost between US$100 and US$200 billion while Defence Secretary Donald H. Rumsfeld insisted on no more than US$50–60 billion.

[25] The attack took place on March 19th, 2003.

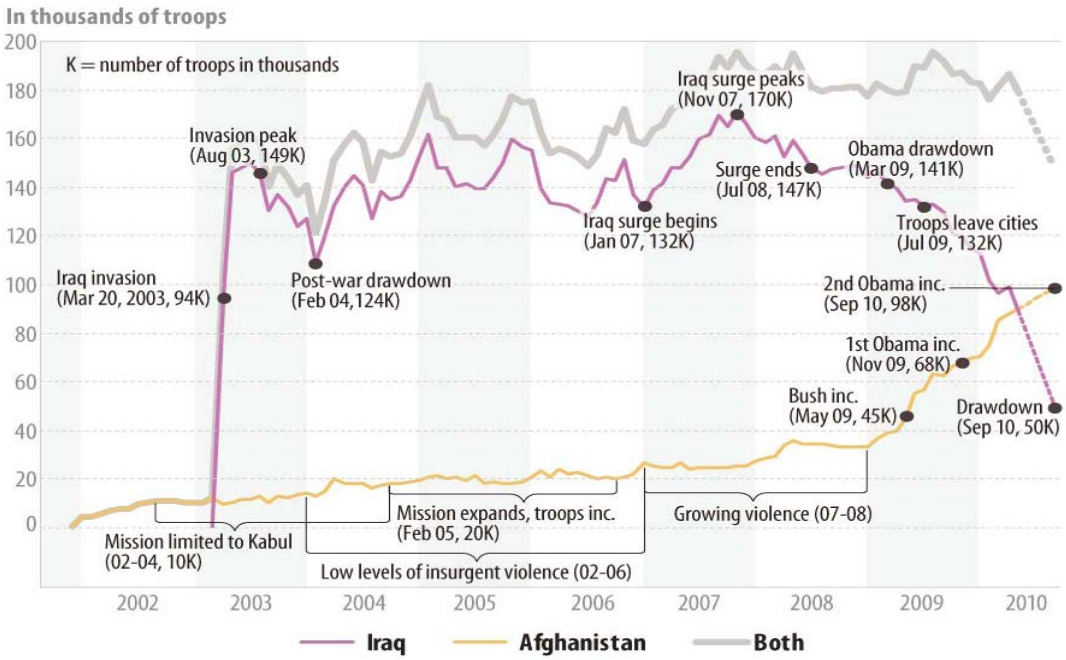


Figure 65-8 US Troops in Iraq and Afghanistan 2001–2010 (Belasco, 2010)

The benefits of this increased spending were felt by the US economy through increased output, profitability, and demand for labour, as depicted by Figures 66 and 67. On the other hand, the US budget deficit did not enjoy the same positive performance during this period as a result of this development (Figure 68). Increased military spending, combined with low taxation levels, led to a devastating increase of the budget deficit levels.

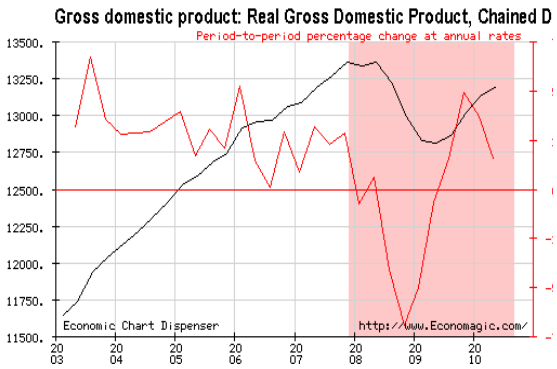


Figure 66-8 US Gross Domestic Product 2003–10. Pink area = Recession (Economagic, 2011)

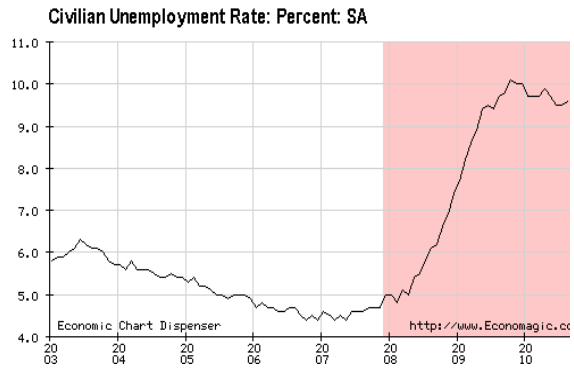


Figure 67-8 US Unemployment Rate 2003–10. Pink area = Recession (Economagic, 2011)

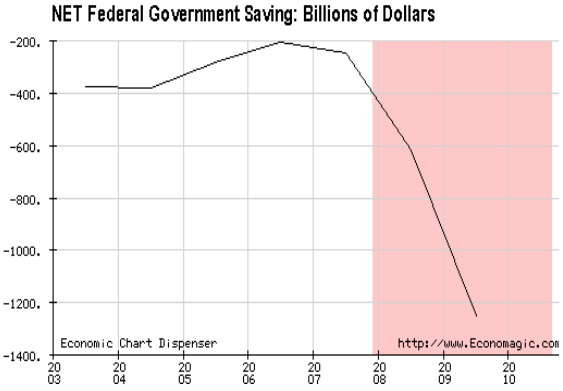


Figure 68-8 US Net Government Saving 2003–10. Pink area = Recession (Economagic, 2011)

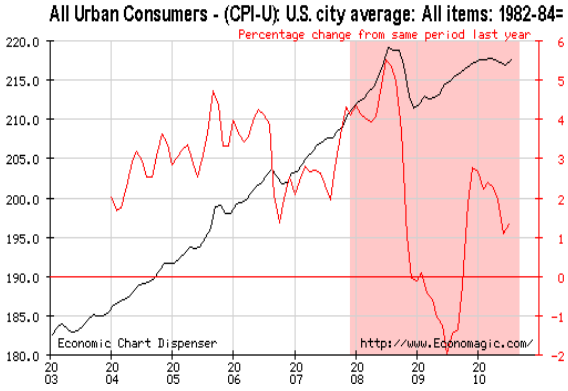


Figure 69-8 US Inflation Rate 2003–10. Pink area = Recession (Economagic, 2011)

Adding to the increased deficit level, the increased oil price level of this period led to pressures on the US dollar and an increase in the US expenditure level. This increased oil price level also resulted in the increase of the transportation and production costs and as a result, inflationary pressures (Figure 69). The oil market experienced an unprecedented oil shock, which saw more than a 400-percent increase in price levels, which shot up from $30 per barrel in 2003 to more than $140 per barrel in 2008.

The direct effects of the conflict in the Middle East on the oil supply and on the oil shock that took place during this period have been a matter of debate. The war in Iraq did disturb the oil supply of one of the biggest oil suppliers to the world, and specifically to the US (EIA, 2012). However, the extent of this oil shock was much larger in magnitude compared to the suggested restriction in supply levels. Approaching the 2007 oil shock as an individual event, the supporters of the peak-oil argument, such as Colin Campbell (2003) and Matthew Simmons (2005), have attempted to define the latest rise in oil price level as a result of the world running out of oil.

This approach fails to fully explain these readjustments in the price level, since if an actual peak had indeed been reached, prices would have continued to rise. Additionally, the data on the international crude-oil demand and production also suggest that this shock was not a result of a shift in either (BP, 2008). Figures 70 and 71 illustrate the

levels of crude-oil demand and supply, and even though they do highlight some rigidity in the growth of production during these years – at a time of accelerated demand from China and Canada – this cannot justify the extent of this shock.

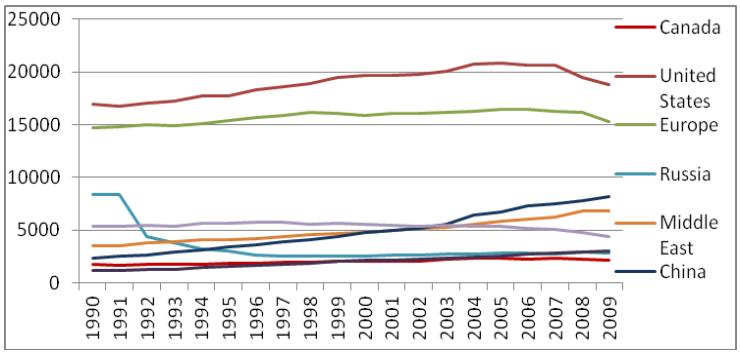


Figure 70-8 Total Consumption of Petroleum Products (Thousand Barrels Per Day) (EIA, 2010)

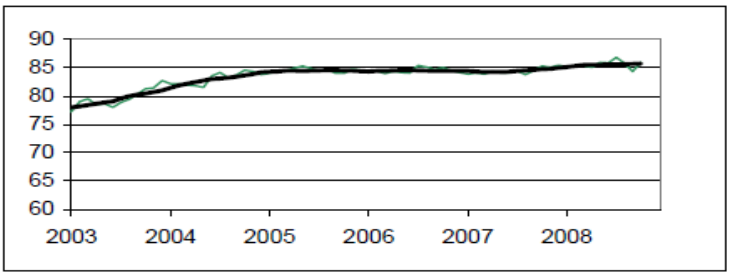


Figure 71-8 World Oil Production 2003–2008 (EIA data in Hamilton, 2008)

Thin line. Monthly global crude oil production, including lease condensate, natural gas plant liquids, other liquids, and refinery processing gain, in millions of barrels per day.

Bold line: 12-month moving average of values from thin line.

As a result, the argument of the increasing global oil demand states that, by the year 2005, the global spare capacity of oil had been reduced to the point where every aggregate unit of oil demanded determined a tightening of the market (Amenec, 2008). This led to the exaggerated oil pricing of 2007/8, which was corrected when world oil demand levels readjusted.

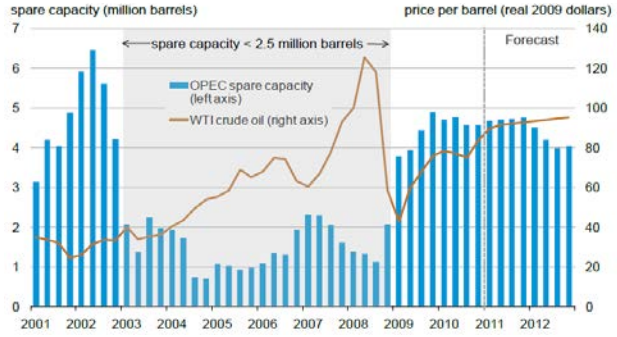


Figure 72-8 Oil market Spare Capacity and WTI Crude Oil Price (EIA, 2012)

Data show a substantial drop in the spare-capacity levels of oil-producing countries in 2007/8 as well as from 2003 to 2008 when the level spare capacity was said to stand at less than 2.5 million barrels a day. This period of low spare capacity has been very influential in determining the level of the oil price, although more indirectly than indirectly, that is by shaping the expectations of the financial investors in the market structure (Interview 1, 2011). The premises of this argument are claimed, however, to rest on rather shaky grounds, with the main fault being that it focuses on the growth of demand coming from emerging markets – which had been expected – thus excessively minimising the real impact that this period of low spare capacity had on the markets (Interview 4, 2012; Oil Week Conference, 2012; Platts Crude Oil Prices Conference, 2012). These critiques notwithstanding, the basic concepts of the argument still stand. This increasing global demand for oil is an undisputed reality and such pressures, as the space-capacity announcements, are to be expected in any goods market, let alone that of a primary energy commodity with both economic and political importance.

On the other hand, and following this line of thought, the market 'fundamentalists', including John Lipsky (2009) of the IMF as well as Philip Verleger (2008a) and David McCormick (2008) of the US Treasury, have argued that the economic fundamentals and the interaction of the demand and supply forces in the oil market were the most influential factor that led to the extraordinary rise of the oil prices in 2008. More specifically they contend that the international growth levels of 2007/8 applied pressures on the fixed capacity of the oil produced in this period. In this view, this caused the prices of oil to go up until 2008, when the international financial crisis affected global demand and resulted in an abrupt drop in oil price levels that, thanks to

supply cuts by producing countries, eventually recovered to a more stable $60 per barrel. However, evidence shows that in the first half of 2008 international oil demand dropped just as oil supply was increasing, which suggests that the market forces were not operating as efficiently during this period as assumed by those studies.

The 'fundamentalist' approach also proposes that the oil prices affect the international economies in several other ways. In this view, for example, any change in the price level of oil will directly affect the average transportation costs, heating costs, as well as production costs of petroleum-based or energy intensive products. This, results therefore in economic pressures similar to those created by a tax, but with no counterbalancing government spending. What is more, upward changes in the oil price level affect the inflation rate and have the tendency to influence consumer confidence and therefore reduce spending and investment.

Nevertheless, this approach, similarly to the peak-oil arguments, fails to acknowledge and incorporate the financial events of the period, and the relationship between the financial markets and the oil market. Michael Masters (2008a), together with other financial market actors, contends that these developments were the result of a *bubble* in the oil market, and neither international growth levels, nor the interaction of the market forces could have been responsible for such an abrupt and extensive increase in the oil price level or for its subsequent collapse a few months later. According to this approach, such factors as increased speculation, portfolio diversification strategies, momentum trading, and herding behaviour were responsible for the built-up of a speculative financial bubble in the oil market which burst as the international financial system collapsed under the weight of the credit crunch (Masters, 2008a).

As a result, this approach to the events of 2007/8 focuses on speculation as the main influential factor, but it does not dismiss the influence of the fundamentals, especially on the level of oil price level. In 2002, it is calculated that the average trading volume of oil futures was four times greater than the volume of demand for the actual physical product; in 2008, and the beginning of 2009, it was fifteen times greater (Khan, 2009).

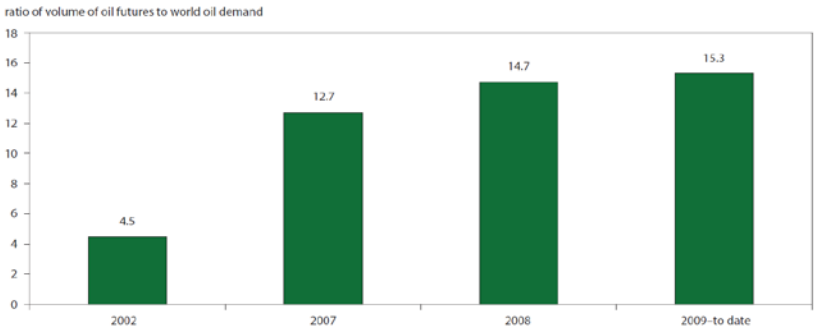


Figure 73-8 Average Daily Trading Volumes of Oil Futures to World Oil Demand (Morgan Stanley data in Khan, 2009)

Michael Masters (2008) contends that the oil price spike of 2007/8 was caused by the investment decisions of actors who had no interest in the physical product, but only in its nature as a financial asset. He goes on to claim that by March 2008 the oil futures index had risen by a quarter of a trillion dollars, and that the typical financial actor strategy was to take long positions in short-term futures contracts and keep selling them days before their expiration before moving on to the following one. Therefore, what Masters proposes is that the financialisation of the oil market allowed for the futures and spot market to be distorted by speculative financial activity. To be sure, the data in Figure 73 do not accurately reflect the volume of speculative activity or the exact increase in activity that resulted from the effect of financialisation – even though such a rapid increase can only be explained by reference to the role of speculative activity. This point is confirmed by the collapse of the oil market in 2008/9, when the volume of the oil futures traded plummeted in a clear indication of capital flight, which is a normal corollary of speculation.

A report published by the OECD (2010) on speculation in commodity futures market uses the volume of open interest in the futures markets to identify the increase in activity during the period between 2006 and 2009, which is argued to be a result of the commodity indexes. Tokic (2010) calls for a study that should include all the participants of the crude-oil futures markets to determine the existence and significance of speculation during the 2008 oil bubble. In his later analysis, Tokic (2011) identifies a reduction in the net short positions held by commercial hedgers leading to the peak of the oil bubble in 2008, and therefore concludes that positive feedback trading through

short covering might have been a significant contributor to the increase of oil prices and the inflation of the bubble.

A 2008 UK Cabinet Office Report argues that, despite the lack of concrete evidence for the existence of speculation and for its role in the 2008 spike, some indicators of such activity do exist. The report claims that it is possible to trace the difference in the investment behaviour between the financial and the traditional investors and, therefore, to explain the behaviour of the market. This is because financial investors used oil as a hedging mechanism in their investment portfolios, which means that the similarity of their motives and information made them act in a similar way. They mostly hold long positions, not being influenced by short run changes and market volatility, while also maintaining a higher risk tolerance relative to traditional investors.

The Cabinet Office puts forwards one of the most conservative estimates of the size of the OTC market, that is, more than 30 percent of the total open contracts of the NYMEX market – enough to produce a distortion of the behaviour of capital in the market. In this vein, the report concludes that *'the volume of financial investments from commodity index traders and other investors with little or no specialist knowledge of oil markets may have allowed prices to rise beyond what would have otherwise been the case'* (Cabinet Office, 2008). The flight of capital into the oil commodity market is therefore understood to have stirred a shot-term increase in spot prices, which in turn created positive futures expectations and higher prices. This behaviour came to an end when the financial crisis hit the financial institutions and all this capital was pulled off the oil market.

On the other hand, the OPEC puts forward one of the most exaggerated estimates of the size of the OTC markets in their annual World Oil Outlook reports, stating that '*speculator activity on the NYMEX surged to record highs in the first quarter of 2011. Open interest in the NYMEX WTI exceeded the unprecedented level of 1.5 million contracts which is 18 times higher then the amount of daily traded physical oil'* (OPEC, 2011). In this statement, OPEC puts the size of the paper market into perspective, and emphasises the power of the financial investors in the oil market. In doing so, they

propose that the OPEC is no longer to blame for fluctuations in the price level of the oil market.

In this blame-shifting operation, the OPEC attempts to shake off their reputation as eternal controllers of the oil price level and point to the responsibility of the financial actors in doing so. On the other hand, the UK Cabinet Office (2008) can be viewed as seeking to stress the necessity of regulating such wild markets, while trying hard not to upset one of the core industries that generates growth in the UK economy. Similarly, as the OTC market cannot be measured in any way, each institution or individual provides its own assessment based on its interests. The constant element, here, is that, however conservative or extreme the estimate, the size of this market is substantial enough to be able to influence the performance of the physical commodity markets.

In studying the data of the NYMEX oil futures for this period, the rise of speculative activity becomes evident. Using data from Bloomberg (2011), Figure 74 shows that, as the total volume of oil futures increase exponentially from 2003 to 2007, the increase in the volume of the total short positions is far greater than that of the long positions. This does not necessarily demonstrate the proportion of this increase that can be attributed to speculative activity – however, Figures 75 and 76 do just that. Figure 75 describes the composition of the total commercial positions in NYMEX and observes a steady growth in the volume of both short and long positions, with a small acceleration after 2006. Commercial positions are investments made by hedge funds and market actors, so their incentives are mainly risk hedging and insurance.

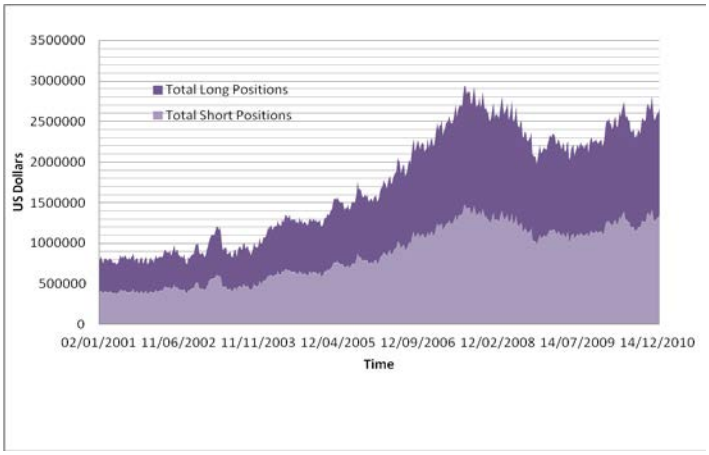


Figure 74-8 Total Positions in WTI NYMEX Oil Futures 2001–2010, 1 contract = 1,000 barrels (Bloomberg, 2011)

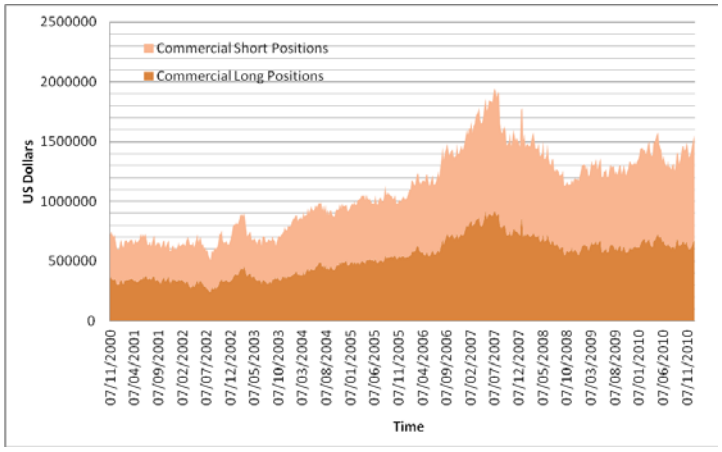


Figure 75-8 Commercial Positions in WTI NYMEX Oil Futures 2001–2010, 1 contract = 1,000 barrels (Bloomberg, 2011)

On the other hand, Figure 76 illustrates the exact opposite. In contrast to commercial positions, non-commercial positions experience an exponential increase in their volumes from 2003 onwards, falling in line with the first low-spare-capacity investments. More specifically, what becomes evident is that the gradual increase in the volume of short and long positions during this period does not necessarily imply any radical increase in speculative activity. However, spread positions do experience a radical increase. The volume of spread positions, which is a speculatively-driven investment (CFTC), grows from negligible in 2003 to almost the size of short and long positions combined in 2007/8.

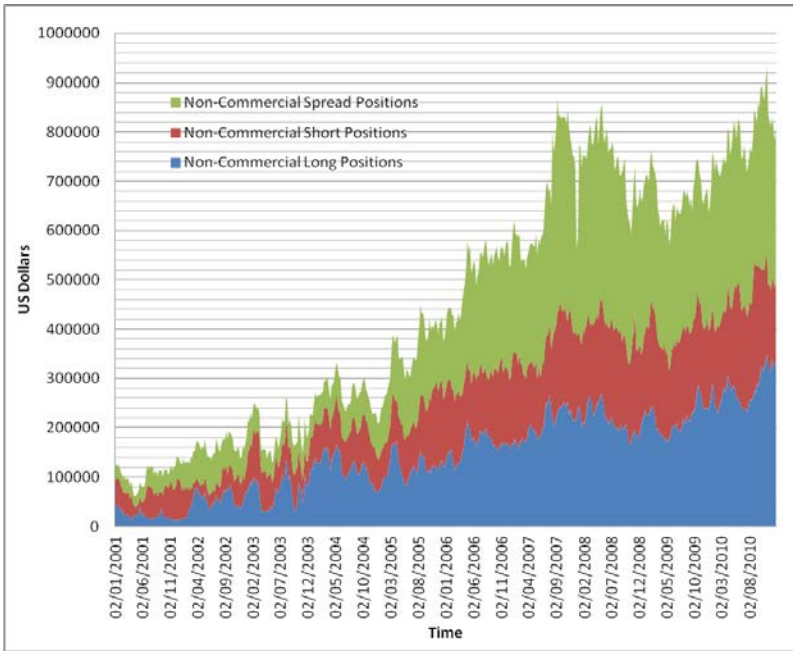


Figure 76-8 Non-Commercial Positions in WTI NYMEX Oil Futures 2001–2010, 1 contract = 1,000 barrels (Bloomberg, 2011)

The growth in volume of the total positions in the WTI NYMEX oil futures in this period is indicative of the rise of the oil market as an investment opportunity, with high yields and favourable risk-hedging characteristics. It also indicates the existence of the effect of financialisation in the market, as its volume more than triples within a five-year period. Additionally, the steady increase of commercial positions relative to the exponential increase of non-commercial ones, specifically short and spread positions, is further evidence of the inputs of speculation in this market.

In addition, the data on oil futures prices relative to their maturity, notably a breakdown among the 1-to-5-year futures contracts (Figure 77) supports this argument. The price difference between the different maturities goes up at the end of 2004, only to fall down in mid-2008, when the oil market crashed. Indeed, this supports the argument the oil market expected increased returns and that speculative opportunities were both widely available and highly demanded during this period.

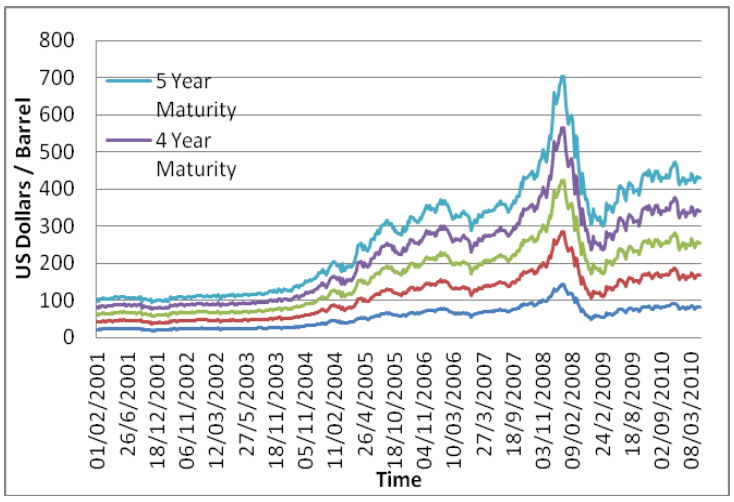


Figure 77-8 Oil Futures Prices Relative to Maturity 1, 2, 3, 4, 5 Years 2001–10 (Thomson Reuters DataStream, 2011)

According to the data, the ratio of the commercial to non-commercial positions in the oil market during this period changes dramatically. In 2001, the ratio starts at about 6:1; in 2003, it rises at 4.5:1; in 2005, it suddenly leaps to 3:1; and, in 2008, it stops at a ratio of 2:1. According to these ratios, in 2001 there were as many as six commercial positions for every non-commercial one, while in 2008 there were only two commercial positions for every non-commercial one.

Year	Commercial	Non-Commercial
2001	6	1
2003	3	1
2008	2	1

Table 5-8 Ratio of Commercial to Non-commercial Positions 2001–2008 (Thomson Reuters DataStream, 2011)

By contrast, the IMF (2006; 2008a; 2008b) has argued against the notion of speculative bubbles in the oil market. It is claimed that there has been no observable correlation between the futures positions and the spot market; it is also claimed that the volumes of momentum trading, which would be an effect related to speculation and bubbles, would have resulted in an increase of the oil inventories or production cuts.

However, as discussed in the introductory chapters to this thesis, the data available on the oil inventories is poor, questionable, often withheld, and invariably short on the figures relative to oil at sea or oil intentionally left underground. This inevitably distorts

any attempt to calculate – or argue from, as does the IMF – the total oil inventories held, or the effects of oil futures on the oil price level. Moreover, Hamilton (2009b) suggests that both a low price elasticity of demand and a restriction in the ability of supply to meet this demand is required for a speculative shock to take place in the oil market: hence, the significance of speculation in the 2007/8 crisis and the impossibility to accurately judging its extent.

More recently, Hamilton (2009b), along with Cifarelli and Paladino (2010), has suggested the possibility that positive-feedback speculation might have taken place in the oil market in this period. In these studies, 'positive speculation' refers to concept first put forward by Delong et al. (1990a), whereby speculators buy commodity futures in response to rising prices, even though underlying fundamental values are disconnected from those prices to the best of their knowledge. Hamilton (2009b) considers the main determinants of the crude oil prices and finds that, due to the low price elasticity of demand, the increasing demand from Asia, and the inability of production to adjust to it, these prices triggered the initial inflationary pressures on crude oil prices, and speculation followed. However, he stresses that the trigger point was derived from the underling commodity market.

An alternative factor that has been considered to have influenced the oil price level and is also directly linked to financial speculation is the US dollar exchange rate. During the period after 2005, the US dollar exchange rate weakened significantly relative to its international counterparts. As shown in Figure 78, the continuous loss of value of the US dollar relative to the other major currencies started taking place from the end of 2005 up until the mid-2008, when the recession unfolded.

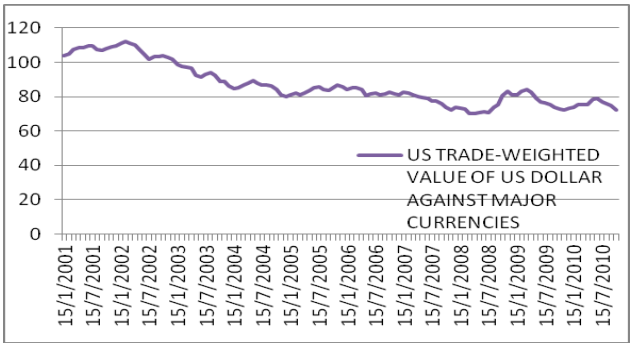


Figure 78-8 US Dollar Trade Weighted Value Against Major Currencies 2001–2010 (Thomson Reuters DataStream, 2011)

A depreciation of the US dollar leads to an increase in the dollar value of oil; if it remains constant, the foreign currency cost of oil will be reduced, thereby boosting the international demand levels. Therefore, part of the increase in the price level of the oil market during this period can be attributed to the performance of the US dollar in the highly speculative exchange rate market. Nevertheless, in 2008, when the oil prices began to spike, the exchange rate of the US dollar was stabilised, highlighting the abnormality of the oil price spike of 2008 as well as the existence of speculative forces within the oil market.

According to Daniel Yergin (2008), recent years have seen investors flowing from traditional financial investments to commodities. He observes that investors are seeking for stable investments in an era of uncertainty and turbulence, and the commodities based financial investments provide them with just that. This can be considered to be based on the fact that commodities are easier to understand compared to the more complex financial products: their price drivers are usually widely public and, based as they are on actual primary commodities with inelastic markets, they are not yet considered fully financial products. The oil market provides such an alternative investment possibility and therefore, especially in view of its performance compared to gold, attracted a vast amount of investments (Khan, 2009). The commodities markets now provided a very accessible market with positive returns, which was also able to hedge part of the inflation risk associated with many investment portfolios.

Of great interest are also the developments that have directly shaped the market in this period. Based on the behaviour of the futures market before the invasion, the oil price level was expected to remain at $20 to $30 per barrel. This figure was the general expectation of the futures market, upon which trading took place. This expectation was formed under the assumption that nothing out of the ordinary would ever occur and that the analysts of the financial institutions, hedge funds, investment banks, and index funds, as well as those of the oil trading and oil producing companies, were fully aware of all the long-term market dynamics, such as the rising Asian demand. Their expectations of oil price levels were shaped accordingly (Interview 3, 2012).

Among the most notable external disruptions to these expectations are the war in Iraq, hurricane Katrina, and labour strikes in Venezuela (De Carvalho and Suni, 2003). However, the Iraq invasion is possibly the main shaping factor of this change in investor expectations as the other events were not close or large enough to have affect expectations or market price levels. What is more, if a demand shock were responsible for this increase, then the necessary adjustments would have taken place within a 12-month period in order for supply to meet demand and normalise the price level. This would also have been the case if the shock were in fact more closely connected to hurricane Katrina. Yet, this increase was almost continuous from 2003 to 2008, when it ended with an abrupt drop at the end of the crisis.

On this point, therefore, Hamilton (2003) attempted to trace the effects of the conflicts that affected the oil pricing and, hence, the US economy. In one of his studies, Hamilton (2008) deliberately overlooks conflicts that involved the US in order to observe the behaviour of its economy in the absence of political and military influences. He identifies five conflicts, which, he claims, can be conceived as totally external to the US economy. He then moves on to calculate the relation of causality between these conflicts and the oil price level and the US economy. His findings show that these episodes led to increases in the oil price level, which, in turn, preceded slowdowns in the US macroeconomic performance (mainly in terms of output growth).

By the same token, Lutz Kilian (2008a) studied oil production data from the Middle East and inquired into the effects of external shocks on oil quantities. In particular, he calculated the difference between oil production in the case of conflict and the possible volume of production in the case of no conflict, thus providing with a measure of supply shortfall. He concludes that there is a correlation between conflict in the Middle East and US macroeconomic performance. This correlation can be explained as the outcome of increased oil prices and as increased budget deficits due to increased spending on the part of the US. This correlation, however, can also be studied under the lens of financialisation, where the correlation between these two events is increasing as a result of the rise in the number and strength of the links that connect the two entities. In this framework, such links take the form of financial investors, products markets, and institutions.

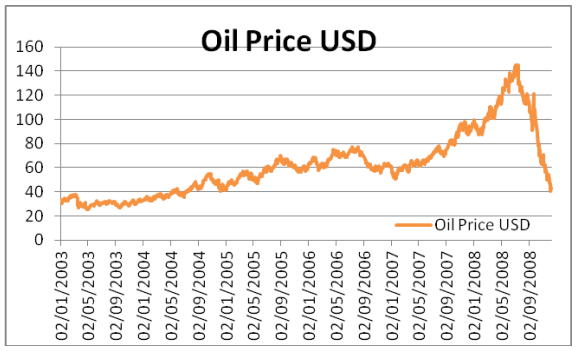


Figure 79-8 Oil Price in US Dollars 2003–08 (Bloomberg, 2011)

Considering the links of this oil shock with the financial crisis that followed it and the general environment of this time, many shared factors can be identified as influencing the developments in the oil and financial markets. Figure 79 shows the gradual, but substantial, increase in the oil price level from 2003 until the mid-2006; the short slow down at the end of 2006; and the upward rally that followed it until the mid-2008. This is completely in line with the pattern of spare-capacity levels announced by the OPEC. Other patterns become more visible when considering the development of the housing bubble that took place in this same period.

The housing bubble had its roots in the reduction of the interest rates by the Federal Reserve in 2001, which resulted in the flooding of the markets with cheap money. The

bubble kept inflating up to the mid-2006 period when it started decelerating until its subsequent fall in 2007. In other words, the booming period of the housing market, if overlapping the increase in the oil price level, stopped prior to the boom period of 2007/8. The commercial and non–commercial position data illustrate that speculation in the oil market started increasing from the mid-2003 and then experienced a sharp increase in early 2007 and late 2008, when the announced levels of spare capacity dropped significantly, spreading in its wake both fears of a peak oil and expectations of an increase in the oil price level.

This raises the question of what drove this rally in speculation levels, and consequently the spot price level in the oil market, and how this relates to the general financial and economic environment of the period. The first part of the answer can be found in the military activities of the US in the Middle East. These activities had weakened the budget of the US and had placed pressures on the US dollar value. In consequence, rampant oil prices had an increasingly negative effect on the macroeconomic performance of the US, which now was bound to deepen its deficit by purchasing more volumes of expensive oil in a weaker currency.

It is commonly accepted that the international trend of increasing oil demand, disturbances in the oil supply, and natural disasters accounted for some degree of the increase in the oil price level. Speculation remains, however, over the actual driving factor of this oil shock and, more specifically, what drove, in 2007, this wave of speculators to enter the oil market and cause the shock. As discussed in the theoretical chapters, three factors set the ground of a financial crisis; human behaviour, fundamental economic performance, and regulations. In the case of the 2007/8 crisis, the levels of regulation in the oil market had been minimal and the CFTC had plans afoot to almost eliminate it by deregulating the approved commodity-based index funds (Clapp, 2010) and thus allowing increased capital to be invested in oil market products.

Figure 80-8 US Consumer Confidence Index SADJ 2001–10 (Thomson Reuters DataStream, 2011)

As regards its fundamental economic performance, the US was not in a strictly dire position as, deficit and the exchange-rate issues notwithstanding, it was otherwise relatively stable. At the beginning of 2007, however, everything changed. The unemployment level rised abruptly, GDP levels dropped, and inflationary pressures started to spread through the economy. Studying the behavioural side of the period, Figure 80 illustrates the consumer confidence index of the US during this period. According to this index, US consumers did not start losing their confidence in the economic and financial performance of their country before the end of 2007. There was therefore a lag between the turn in the economy and the reaction of the public.

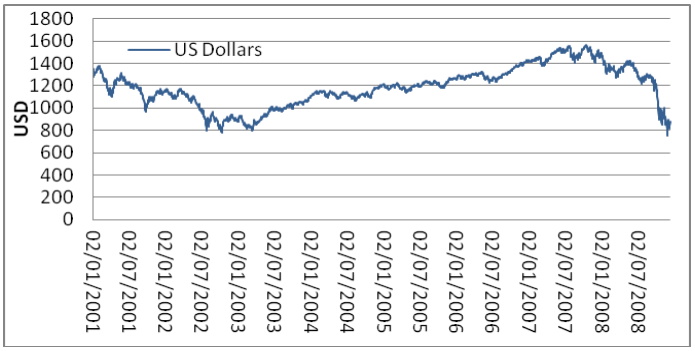


Figure 81-8 SPX Index Performance in US Dollars 2001–2008 (Bloomberg, 2011)

The same lag can also be observed in the performance of the US stock market, where according to the SPX index plotted in Figure 81, the index sets on a growing path starting from 2003 and ending at the end of 2007. This growing path is very much in line with the boom in the speculative activity in the oil market, but it seems disconnected from the pattern of the more financial real-estate market, which starts

contracting more than a year earlier. The growing pattern is explained by the consumer confidence index, however, as they start contracting simultaneously at the end of 2007. This challenges mainstream accounts of the real-estate bubble, or subprime crisis, as the direct and only explanation of the 2007/8 crisis. Although the connection is undisputed, the lag between the beginnings of the contraction of the real-estate market and that of the stock market is evidence that the oil market also had a role in the development of this crisis.

Attempting to find a causal relationship between these events, while also explaining the sudden change of the economic situation in 2007, raises a number of issues. First, the expectations of the speculative institutions involved in the oil market were that the price level of oil would keep rising and that, in so doing, such expectations attracted massive flows of capital into the market, thus creating a self fulfilling prophecy. The conflicts in the Middle East, supply disturbances, and increasing oil demand almost guaranteed that the positive performance of oil as a financial investment would be maintained; the second drop in the levels of spare capacity announced in 2007 further ensured that any disturbance would lead to even further increases. The attitude of the US government in its war against terror, its unwillingness to withdraw troops from the Middle East, and its consequent surge of troops in Iraq to maintain order and stability, which started in mid-2006 and peaked at the beginning of 2007, also signalled that the US military involvement in the region would not end soon.

The developments described above, along with the steady and guaranteed increased returns that investments in the oil market seemed to present, attracted the inflow of vast amounts of capital. This change in investor preferences seems to have been in line with the peak of the housing-market bubble, which began its deceleration as investors turned to the more short term and inflated profits of the oil market. Whether these investors chose the oil market as a rationally pondered investment alternative to the housing market or if they were fleeing from a crashing housing market is not known. However, a linear causality between these events is apparent.

The significance of this claim is intensified by the fact that, while the housing bubble burst and the real-estate prices kept falling in the following years, the oil market maintained its upward rally for more than a year before dropping back to its 2003 levels. It is important to point out that since 2007, when the price level of oil began rising, the effects of this hike had a direct effect on the macroeconomic performance of the US. With the US exchange rate worsening and the price of its imports – including oil – fast increasing, the external aspect of the US economy was facing increased pressures. These pressures were promptly passed on to the levels of output and inflation, and from there to energy costs and unemployment. This put extraordinary contractionary pressures on the economy from end of 2007 and led to the announcement of US official entering recession at the end of 2008.

From the beginning of 2007, the per-capita income of the US experienced a small deceleration relative to income levels (Figure 82). Even though both figures keep rising until 2008, when the recession becomes official, their pattern is in line with the argument presented above. Although the levels of income were not affected prior to the recession, the deceleration of consumption levels that preceded it betrays the level of uncertainty and confidence loss that spread through the public and that heralded the financial deceleration.

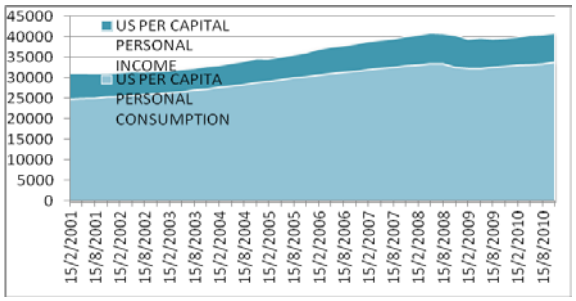


Figure 82-8 US Personal Income and Consumption 2001–10 (Thomson Reuters DataStream, 2011)

The argument presented in this chapter shows not only that the process of financialisation has, indeed, taken place within the structure of the oil market, but that during the 2002–2008 period it has, in fact, peaked out by allowing for speculation to enter and affect the performance of the market. In this sense, it is possible to

characterise this period as one of 'advanced financialisation'. Advanced financialisation, here, denotes the accelerating clip at which financial capital entered the market between 2002 and 2008, leading to unprecedented levels of financial activity in the oil-based financial markets. The existence of this process in the oil market is confirmed by the increased role that expectations, connected to the military turbulence in the Middle East and spare-capacity announcements, seem to have had in the determination of its price level.

This period also denotes the increasing role of the oil shock in the general macroeconomic and financial environment of the period, determined by the linear causal link existing between the inflow of speculative capital in the oil market, high oil prices, and US macroeconomic indicators. What is more, this analysis draws attention to the role of the oil market in providing an alternative investment opportunity in the year immediately following the beginning of the housing market crash and, therefore, in decelerating the effects of this crash in the financial and economic performance of the US. Finally, its subsequent crash is then considered partly responsible for the unprecedented deficit and currency weakness that pushed the US into an even deeper crisis.

In order to address the research questions of this thesis, this chapter proceeded by distinguishing three periods of financialisation in the oil markets: low (1980–1990), early (1991–2001), and advanced (2002–2008). Focusing on three distinct episodes oil shocks, this thesis studied the nature and impact of the process of financialisation in the oil market. The addition of a new, purely financial group of actors to the dynamics of the structure of the oil market has been argued to have led to the creation of a performative cycle between its physical and financial realms. This study focused on the US economy because its nature as an international financial centre, its high oil import dependency, and its currency, which serves as the official currency of the oil market, make it the most heavily oil-influenced economy in the world as well as the economy where the effects of the financialisation of oil are strongest.

The three periods of financialisation of the oil market have been analysed within the theoretical framework formulated at the outset of this thesis, which consist of the two-pillar approach to the study of the financialisation of commodity markets and the performative cycle between the physical and the financial dimension of said markets. The analysis of the motives, actors, markets, products, and institutions that have developed and driven the financial, macroeconomic, and oil-market performance over these three periods considered both the events that shaped the fundamentals, the behavior, and the expectations of the actors involved in the market and the background effects of the evolution of technologies and regulations. This argument put forward that, over the last thirty years, the oil market has progressively transformed to become an increasingly important factor in the political economy of the contemporary financial and macroeconomic crisis.

PART 3

FINANCIALISATION THROUGH CRISES

9 Crises and the Oil Market

As explained in the theoretical background of this thesis, financialisation can only be meaningfully approached as a set of transformations, rather than as a single process of evolution (Casey, 2011). This collective process of transformation is understood to be embedded in the global economic and financial systems, where it has effectively captured the underlying dynamic that has shaped the evolution, over the past four decades, of both the systemic and the institutional levels of the oil market. Analysis of the financialisation process of the oil market, thus conceptualised, has required the formulation and adoption of a two-pillar approach in order to take advantage of the analytical tools of both the systemic and the institutional understandings of financialisation. This approach defines financialisation as a phenomenon that causes the progressive disconnection, and eventual decoupling, of a financial-market facade out of the underlying real economy of a commodity market in a transformative process that, within the limits and scope of contemporary technologies and regulations, lock these twin market dimensions in a self-propelled performative cycle.

Specifically, the two-pillar approach introduced in this thesis focuses, on the one hand, on the behaviour and expectations of market actors, be they involved in the financial or

in the physical dimension of the market, and, on the other hand, on the real economic and financial performance. Both these pillars are studied against the background of technologies and regulations, which delineate the extent and resonance of their effects. The key effects, events, and actors connected to the evolution of the oil market throughout its early, low, and advanced phases of financialisation are collected in the comparative breakdown presented in Table 6 below. This Part of the thesis will align the data of these historical developments against the models of the two-pillar approach so as to show the spread of the financialisation process in the oil market over the course of the past three decades.

While differing in a number of fundamental respects, these three turbulent periods share a set – however basic – of fundamental features and causal parameters. The different historical variables that are imposed on them depend, in the argument of this thesis, on the degree to which the underlying evolutionary dynamic of the financialisation process has penetrated within the structure of the market.

Indeed, this evolutionary dynamic follows a distinct pattern throughout the three periods under study, which consists of US macroeconomic instability, US-related political and military turbulence in oil-producing nations, increasing oil price levels, and the resulting deterioration of the US macroeconomic performance along with the deceleration of an overinflated US financial market. This pattern was observed in all three periods under study. The dynamics and drivers of this pattern are based on the performance of the fundamental economic indicators and on the formation of market expectations; while constant throughout the three periods under study, this pattern exhibited a gradual acceleration in spread and depth from 1991 to 2008.

The process of financialisation of the oil market has been punctuated by a number of key events that have driven its development – and thus the gradual transformation of the oil market – forward. The event that most dramatically accelerated this transformation was the erosion of the traditional three-actor structure of the oil market and the introduction of a fourth group of actors. Financial in nature, these new market participants only operate within the boundaries of the financial market. Much as they

are detached from the physical commodity production, however, these financial actors have the ability to influence the oil price level without directly altering the supply-and-demand forces of the physical oil market. These actors generally include a number of large International Oil Companies (IOCs), a few National Oil Companies (NOCs), big Utility Companies, commodity trading companies, as well as small oil-producing and storage firms seeking to hedge their risks. On top of these are hedge funds, investment banks, asset management institutions, and specialist trading houses.

The volume of activity in the oil-based financial market has increased exponentially throughout the thirty-year period under study, but experienced a particularly marked acceleration in the post-2000 period. This sudden expansion of financial activity in the oil market was driven by a number of events and developments, such as the indexes introduced in the 1990s, the end of the 'prudent investor' rule, the release of the CFMA regulations, and the advent of Internet-based trading in the 2000s.

The indexification of the oil market was a process started by Goldman Sachs in the early 1990s. This system introduced a simplified investment option for commodity markets, which including that of oil, that made it possible to invest in them without the issue of physical storage or imperfect market knowledge. A number of alternative index options became available shortly after, and as oil was deemed a very efficient hedge market against the risk of inflation, these indexes enjoyed increasing demand.

Two other key events accelerated the growth of traded contracts in the oil-based financial markets. One was the development of new technologies, and more specifically, the development of Internet-based trading. Since oil futures and options became available for trade over Internet platforms in 1999, an increasing large and international number of actors was given remote access to the market. The other was the introduction of the Commodity Futures Modernization Act in 2000 (CFMA), which partially deregulated the market by allowing for an increase in the volumes of OTC trading. This act effectively dissolved the 'prudent investor rule' and created a loophole for some of the largest financial institutions, such as pension and hedge funds, to get involved in the market.

The involvement of these actors in the oil market increased by 170 percent between 2002 and 2008, in an estimate that, if only accounting for trading within clearing houses, already outstripped the value of the actual physical production of the underlying commodity. The exact value of the total trades in oil-based financial products is unknown and any estimation is highly speculative as the volume of the OTC market for this period cannot be measured. These estimates also vary; some give that the value of commodity-related OTC contracts increased by more than 14 times, others that almost 90 percent of the oil commodity swaps and options trades took place in the OTC market. These figures, however, come into perspective when considering that institutions such as hedge funds, pension funds, and speculators have, reportedly, an estimated asset value under management of over $60 billion outside of the OTC trades (Fusaro and Vasey, 2006).

These figures highlight the importance of understanding the financial motives behind the new volumes of capital that enter the market. According to the CFTC data employed in the thesis, there are two categories of investors in the oil-based financial market, commercial and non-commercial, and three types of investments that they can perform, long, short and spread. The long and short investment positions are mainly viewed as long-term or hedging investments, regardless of whether they are performed by commercial or non-commercial investors. On the other hand, spread positions are considered speculative investments; sure enough, the growth in the volume of these investments increases throughout the three periods under study and, in keeping with the pattern of the financialisation process, accelerates at the turn of the millennium. The addition of these investors has introduced characteristics, especially in terms of actor behaviour, typical of purely financial markets, such as herding, loss aversion, and price manipulation. All these factors intensified the decoupling of the financial aspect of the price level of oil from its underlying commodity value.

Thus, a new market has emerged where oil can be traded as a financial asset, detached from its underlying commodity. Trade in these financial assets does not require the physical delivery of the commodity and, as such, has attracted a vast amount of capital from financial actors and institutions with little interest in the underlying commodity. A

number of studies discussed in this thesis have focused on the correlation between the oil market and the US financial and macroeconomic performance. They find a strong correlation in the post-2000 era and also identify the spill-over effects of volatility from the financial markets to the commodities markets. These can be understood as the direct effects of the process of financialisation as they are driven by the growing number of investors who hold mixed portfolios and whose investment activity is prone to shifts in expectations and behavioural traps such as herding effects and loss aversion. Additionally, increased co-movement is observed between different commodities as a result of the indexification process.

The process of financialisation in the oil market has triggered an inflow of financial actors as well as an increase in the volume of capital active in its structure at any given point in time. While in the period of early financialisation the number of financial actors active in the oil-based financial markets was limited, the developments of the late 1990s and early 2000s opened the door to institutions that, albeit with no prior involvement or understanding of the market, were now able to enter it and take advantage of its hedging attributes and profit potential. The increasing numbers of financial actors in the oil market shifted the dynamics of the market and re-enforced its correlation with its financial dimension. The availability of oil for purchase as a purely financial product, without any exposure or commitment to the underlying product, made speculation possible, attractive, and extensive. Financial and speculative trading in the oil market pushed the futures prices to levels that could not be justified by rational expectations of the future trajectory of supply and demand. This is how the oil price levels eventually decoupled from its fundamental values.

The influence of the new financial actors over the price-setting mechanism, which triggered the decoupling of the oil market, is exercised through a performative cycle that ties together the performance of the physical and the financial dimensions of the oil market. ‘Performative cycle’, here, refers to the reverse feedback loop that connects these two markets through the performance of economic fundamentals and market expectations. In other words, the performance of the oil-based financial products acts as a guide for the physical commodity market, and, at the same time, the expectations on

the prospects of the underlying commodity market influence the pricing of oil-based financial products, thus creating a circular pattern of influence between the two markets.

The research conducted for this thesis finds that, as a result of this performative cycle, the financial decoupling of the oil market has intensified further, especially since the turn of the millennium when deregulation, technological advancement, and financial marketisation accelerated. This process has led to the transformation of this market into an asset class. As a consequence of this transformation, the influence of the financial actors in the dynamics of the oil market has increased. The higher volumes of capital injected by these investors have provided the oil market not only with increased liquidity and growth, but also with a stronger connection between its physical and financial dimension as well as with the US financial markets. The increasing influence of the financial actors is also due to the role of speculative investors and price manipulators, who, as a very active part of the class of financial actors, and especially involved in the short and spread products markets, typically follow, or drive, noise-trading strategies by inflating, and then speculating on, the fluctuations of the market. The increased correlation with the US financial markets and the introduction of speculative and price manipulative motives in the market have magnified the volatility of the price levels of oil.

The increased influence of the new financial actors in the price-setting mechanism of the oil market and in its effects on the international financial and macroeconomic performance raises questions over the motives and expectations of these actors. The two-pillar analytical framework proves particularly valuable to this discussion. The merit of this two-pillar structure is that it purports to provide an explanatory framework for all the main transformational developments that have contributed to the evolution of the financialisation of the oil market.

Among these transformational developments is the introduction of the new regulatory and technological instruments that, since the 1980s, have changed part of the underlying structure of the oil market and facilitated the progression of its process of financialisation. This transformation of the oil market has involved both increased price

volatility (Clapp, 2010) and inflationary pressures on the spot oil price, which peaked with the emergence, in the post-2000 period, of a separate oil-based financial market (Labban, 2010), decoupled but interlinked with the physical one (Behr, 2009).

The pillars of economic fundamentals and actor behaviour and expectations are very highly interconnected in the performance of the oil market. This is primarily due to the mediating role of the fourth group of actors. These financial actors widely differ from the traditional investors of the oil commodity market in both the types and the motives of their investments. Financial investors have either risk-hedging or speculative investment interests; in both cases, their motives are based on expectations. In the first case, hedging investments are based on the negative relationship of the oil market to the performance of the main macroeconomic indicators. As a result, hedging investments in the oil market are mainly based on the expectations about the future performance of the fundamental indicators. In the second case, speculative investments are mainly based on oil-market fundamentals, such as the level of spare capacity or the expectations of future investment patterns. In contrast to the more market-oriented investments of traditional oil market actors, therefore, the behaviour of these financial actors is shaped by irregular investment patters, such as herding behaviour, wave riding, and expectations of price increases following the announcement of reduced supply levels or spare-capacity levels.

In conclusion, this two-pillar approach identifies two different dynamics at work in the financial dimension of the oil market. The first is that of regulations and structural or operational developments. Such developments take the form of the technological or regulatory background that determines the speed and depth to which the financialisation process penetrates within the oil market structure. The second dynamic involves the pillars of economic fundamentals, on the one hand, and behaviour and expectations, on the other. These two pillars have been shown to be intertwined and interacting performance of economic fundamentals shape expectations, and behaviour, on the political, economic, financial, and ultimately oil-market level; on the other hand, behaviour and expectations, through their links with the international financial and macroeconomic markets, influence the determination of the price level of oil and,

hence, the rest of the economic fundamentals. This establishes a performative cycle between the two pillars of this framework. The following chapter will test this two-pillar approach against the historical data for the financialisation of the oil market, as presented in Table 6.

		Early Financialisation	**Low Financialisation**	**Advanced Financialisation**
US Macroeconomy	*Inflation*	Drop from 10% to 0% to around 3%	From 3.5% to 1.5% back to 3.5%	From 2.5% to 6% to around 2%
	Unemployment	Rise from 5.5% to 7.75% (sustained in the years after the official recession)	Rise from 4% to 6.25% (sustained in the years after the official recession)	Rise from 3 to about 10% (sustained in the years after the official recession)
	Growth	Drop from 4% to -3%	Drop from almost 8% to -1%	Drop from more than 5% to around 2.5%
	Exchange Rate	Drop of about 10%	Drop of about 5-6%	Drop of about 35%
	Federal Budget	Deficit	Turn into deficit after surplus of 1990s	Largest deficit in US modern history
	Official Recession	Yes (1990 to1991)	Yes (2001)	Yes (2008 to 2010)
	Monetary Policy	Attempt of a soft landing by the Federal Reserve, rise of interest rates before the recession, attempt to stop recession by cutting down in the rates	Attempt of a soft landing by the Federal Reserve as fears of Corrosive Inflation were creeping in, rise of interest rates before the recession, attempt to stop the recession by cutting the rates down to 1%	Very low interest rates as a result of the preceding crisis, rates fell even lower due to expansionary response to 2008 recession
	Fiscal Policy	Expansionary, increased expenditure due to military activity in the Middle East (Iraq 1)	Expansionary, wide tax cuts, increased expenditure due to military activity in the Middle East (Afghanistan)	Expansionary, fiscal injection plans in for recovery, increased expenditure due to military activity in the Middle East (Afghanistan + Iraq 2)
US Asset	*SPX Index*	SPX Index performance drop by about 60 points (oil – Iraq)	SPX Index performance drop by about 700 points (dot-com bubble – oil)	SPX Index performance drop by about 750 points (housing market – oil)

Markets	*Timing*	Before the official economic recession – in line with the Kuwait crisis	Before the official economic recession – in line with the oil spike	Before the official economic recession – in line with the Iraq surge and the oil price hike
The Oil Market	*Change in Oil Price*	Yes – spike in the oil price	Yes – sustained increase in the oil price	Very high increase reaching $150/barrel
	Timing	At the same time, peak during recession	Before the recession	Before the recession
	Driving factors	Turbulence in the Middle East, isolation of Iraq and Kuwait from the world	Re-empowerment of OPEC initially (Venezuela), then turbulence in the Middle East and speculation	Speculation, restrictions of output due to wars
Financialisation in the Oil Market	*WTI NYMEX Oil Futures Positions (Total)*	More than 460,000 (1992)	More than 650,000 (2001)	2.350,000 (2008)
	WTI NYMEX Oil Futures Positions (Non-commercial)	About 40,000 (1992)	More than 100,000 (2001)	More than 850,000 (2008)
Military Activities	*Conflict Involving the US*	Yes – 1st Gulf War (1990)	Yes – War in Afghanistan (2001)	Yes – 2nd Gulf War Iraq (2006) and also still Afghanistan
	Conflict involving the Middle East	Yes – 1st Gulf War, Iraq, Kuwait (1990)	Yes – War in Afghanistan (2001)	Yes – 2nd Gulf War Iraq (2006) and also still Afghanistan
	Timing	Before the financial crisis and official economic recession	After the financial crisis and during the economic recession	Before the financial crisis and official economic recession
Political Status	*Interests of the time*	Saddam's policies in the Middle East to seize control of Kuwait and Saudi Arabian oil was against US interests	OPEC re-empowerment on Venezuela's interest (Chávez), US war on terror – response for September 11th	Continuation of the war on terror, also US interests in the Middle East

Table 6-9 Oil shocks and the International Political, Economic and Financial Status Quo

10 The Financialisation of the Oil Market

10.1 Economic Fundamentals (1989–2010)

The first part of Table 6 focuses on the US macroeconomic performance during the three phases of the financialisation of the oil market identified in this thesis. Insofar as the oil-market price level has direct effects on the international macroeconomic performance (Mork, 1989; Hooker, 1996; Rotemberg and Woodford, 1996; Hooker, 2002; Blanchard and Galí, 2008; Edelstein and Kilian, 2009; Herrera and Pesavento, 2009; Baumeister and Peersman, 2009a), it may be possible to identify a pattern in the kind of effects that the oil shocks had on the US macroeconomic performance in particular. Indeed, in all three periods in question, the US macroeconomic status prior to the peak of the oil shocks played a very influential role in the magnitude of the effects that the oils shocks had on the macroeconomic performance itself (Hamilton, 1996). While a stable and robust US macroeconomic status may have proved resilient to the effects of an oil shock, an instable one seems to have been comparatively more vulnerable.

On this point, Table 6 shows that, in all three phases of financialisation, an oil shock was always preceded by a period of US macroeconomic instability or fragility. In all three cases, the poor macroeconomic performance of the US was attributable to policies introduced by the Federal Reserve prior to the oil shocks in response to the potential danger for a recession. More specifically, in the first two periods, the recessions were preceded by long periods of economic expansions that lasted until the introduction by the Federal Reserve of high interest rate policies designed to manage a controlled slowdown of the economy and fend off corrosive inflation pressures (Arestis and Karakitsos, 2004; Greenspan, 2008: 207). These were the same policies that were first retracted once the economy had taken a bad turn and interest rates had to be cut down

again. In the case of the 2008 period, the shock was also preceded by a boom in the US macroeconomic activity, which however was financed by the Federal Reserve highly expansionary monetary policy. By keeping interest rates to 1 percent for the best part of the decade after the 2001 crisis, the Federal Reserve had provided the US economy with a liquidity boost that destabilised the macroeconomic performance in the process.

In all three cases the US macroeconomic performance was fragile. On the whole, this was mainly due to the policies of the Federal Reserve, which, in its efforts to normalise the economy, had left it weak and vulnerable to the negative effects of the subsequent oils shocks, as discussed in Chapter 6. This macroeconomic fragility was exposed and exacerbated by the effects of the oil shocks. During all three oil shocks, inflation levels, which, in turn, affect interest rate policies and the overall macroeconomy, dropped sharply, only to normalise at around 2–3.5 percent later. Unemployment levels offer a perhaps more telling reflection of the effects of these shocks, being as it is directly related to productivity levels. During the first two shocks, the unemployment rate rose by 2.25 percentage points, while in 2008 by 7. The increases in the unemployment rate also illustrate the depth of these effects as they were all sustained for years after the shock.

Unemployment rates followed a similar pattern to other macroeconomic indicators. GDP levels, in particular, dropped significantly during these three periods. In the 1991 period, the GDP dropped from 4 percent to −3 percent, which is particularly indicative of the strong physical-market dimension of this oil shock. Similarly, during the 2001 shock, GDP levels dropped from 8 percent to −1 percent. However, the 2008 shock caused only a 2.5 percent reduction in GDP levels, even though the extent of the oil shock was much larger than the previous two. This is evidence of the comparatively larger financial-market aspect of the third oil shock.

According to the data presented in chapter 6, the US dollar against the weighted average of the main international currencies, as calculated by the OECD, lost 10 percent of its value during the 1991 period, 5–6 percent during the 2001 period, and a very wide 35 percent during the 2008 period. The US dollar exhibited a very strong link with the oil

price level. The nature of the US dollar as the official currency of the international oil trade has been beneficial to the US economy in periods of economic expansion, but less so in during recessions. On the one hand, the rise of oil price levels has always been followed by a reduction in the value of the US dollar; but, on the other hand, the lower value of US dollar value contributed to the accumulation of wide budget deficits due to the inelastic nature of the oil demand as well as its heavy oil import dependence.

As regards the external macroeconomic performance of the US, the federal budget, in all three periods, was negative. In the case of 1991, the US budget was already in deficit; the deficit then worsened in 1991 and reached its peak in 1992 with more than double its value as in 1990. In the case of 2001 the situation was completely different. In 2000, the US was experiencing a very healthy budget surplus, which however turned very quickly into a deficit in 2001 and reached its lowest point in 2003 with a more that 300 percent decrease. In the case of 2008, the US economy was already running a deficit after the events of 2001. However, the 2008 oil shock put such heavy pressures on the US economy that the deficit skyrocketed by more than 500 percent to become the biggest budget deficit in the modern history of the US.

These budget deficits, however, were not caused exclusively by the effects of the oil shocks on the US dollar value and the cost of the US oil imports. They were also a result of the expansionary fiscal policies that were in place at these times and of the military activities in which the US was involved. On the domestic level, the kind of fiscal policy followed during these analytical periods was mostly expansionary. The most negative effects that fiscal policies imposed on the US budget deficit during these periods occurred in 2001 and 2008. In 2001, the wide tax cuts introduced by the newly elected president, in keeping with his electoral campaign promises, were mostly financed through a budget that was still running in surplus (Greenspan, 2008: 223). In 2008, the negative effects of fiscal policy occurred only after the recession in the form of large-scale injections of fiscal stimulus (Paulson, 2010).

By contrast, the military activities in which the US was involved had major implications on the US budget deficit during all three of the periods under study. The first period was

punctuated by two types of military involvement. Initially, the invasion of Kuwait by the Iraqi forces seemed to be of immediate concern only to the countries of the Middle Eastern region, although conflict, along with the embargo imposed on oil from Iraq and Kuwait, did cause a significant shortage in the international supply levels (Miller, 1998; Bamberger, 2000; Rodríguez, 2002: 204; Hamilton, 2008). However, the subsequent involvement of the US magnified the international effects of this conflict. Not only did the conflict influence the price level of oil through supply shortages, but also had a direct impact on the US macroeconomic performance as well as indirect effects on its financial performance. As analysed in previous chapters, the Gulf War occurred prior to the 1991 financial crisis and macroeconomic recession. Nevertheless, this conflict paved the way for the 1991 oil shock whose macroeconomic effects, as discussed above, contributed to the macroeconomic recession and the subsequent financial crisis.

The second period was marked by military activities of a different nature. In 2001, and after the 9/11 attacks, the US authorities launched an attack against terrorist groups in the territories of Afghanistan. While this conflict did take place in the Middle Eastern region, did involve the US, and did result in extensive physical damages, it did not significantly disturb international supply levels. This was mainly because Afghanistan, much as it is surrounded by countries rich in oil supplies, does not produce such high levels of oil to affect international supply. Even so, the expectations shaped by the conflict in the Middle East, which were also confirmed by a rising oil price due to the resurrection of OPEC under the leadership of Chávez, along with the macroeconomic consequences of a US military activity and a rising price level, placed tremendous pressures on the US macroeconomic performance (Bamberger, 2000; Rodríguez, 2002: 204). These pressures, along with the financial developments surrounding the turn of the millennium and the financialisation of the oil market, pushed the US economy into a recession and the financial markets into a crisis.

The third period witnessed another kind of military involvement. There were two separate conflicts in action during 2008, both located in the Middle East and both involving the US. The first was the war in Afghanistan, which, although not active in at the time, saw the number of US troops increasing (Belasco, 2010). The second was the

second war in Iraq. Again, the war on Iraq had actually started in 2003; however, in 2007 there was an extraordinary surge of US forces with troops increasing by around 30,000 in the space of one year (Belasco, 2010).

In the case of 2008, similarly to 2001, the war in Afghanistan was not a significant influence on the actual international levels of oil supply. Iraq, on the other hand, as one of the OPEC members with the largest oil reserves and one of the main oil exporters to the US, took its toll on supply levels. Even though both these wars had started years earlier, by 2008 the US military involvement had not diminished, but had in fact proliferated (Belasco, 2010). The war in Iraq also proved to be much costlier for the US economy than initially expected to the point that financing these military activities put enormous additional fiscal pressures on the US economy (Stiglitz, 2008).

Even though the role of conflict in the Middle East had the potential to affect the levels of the international oil supply, market expectations, and therefore oil prices, the involvement of the US amplified their effects. The military activities of the three periods under study were very costly and required significant fiscal expenditures on the part of the US government, thus causing deteriorations of the US budget deficit. This deficit, however, in all three cases was met by both increasing oil prices, due to oil being marketed in US dollars, and severe corrective monetary policies, which destabilised the macroeconomic indicators even further and led to official recessions.

Indeed, the result of expansionary fiscal policies, military involvements, destabilising monetary policies, and oil shocks was that, in each of the three periods under study, the US economy fell into an official macroeconomic recession. The first took place between 1990 and 1991, the second during 2001, and the third one from 2008 to 2010. The timing of these recessions, in relation to the oil shocks of their respective periods, was after the initial increase of the oil price level. The smallest lag can be observed, of three months, was in 1991, and the largest, lasting approximately five years after the initial oil price rise, or one year after the upward acceleration of the oil price levels, was in 2008. That the oil shocks preceded the macroeconomic recessions in all three cases confirms

the argument that there is a direct causality between oil price levels and the US macroeconomic performance.

10.2 Behaviour and Expectations (1989–2010)

By focusing on the performance of the behavioural and financial aspect of the market during these three analytical periods, it becomes clear that they share a number of similarities. Even though the performance of the asset markets and the oil price level were not significantly correlated before the turn of the millennium, all three oil shocks were followed by a downturn in the performance of the asset markets (Hamilton, 2008). This can be explained by reference to the fact that, even in the absence of a direct link between the performance of the asset markets and the oil price level, indirect links still exist, mainly through the macroeconomic performance. At the same time, the asset market performance is based on the behaviour of the financial actors, which is mostly driven by expectations and the performance of the fundamental indicators. This formed an indirect link between these two entities, even before the emergence of the financialisation process in the oil market.

Table 6 also notes the performance of the S&P index. The drop in performance is evident in all three periods, although the depth of this drop varies. In the first period, there is a 60-point drop in performance, that is, an approximate 17 percent loss of its total value. The drop in performance was connected to the first Gulf War as well as to the indirect effects that the oil shock had on the macroeconomic performance. In the second period, a 700-point drop in the S&P index is observed, representing approximately a 47 percent loss of its value. This loss was caused by a combination of the burst of the dot-com bubble, the 9/11 terrorist attacks as well as the oil shock and the macroeconomic recession. In the third period, the loss of value in the asset markets was even wider, measured as a 750-point drop in the performance of the S&P index, that its, an approximate 49 percent loss of value. Again, this drop in the asset market performance was a result of a combination of events, namely the burst of the housing-

market bubble, the bankruptcy of a number of large international financial institutions, as well as the oil shock, the military activities and the subsequent macroeconomic recession.

The timing of these financial crises in relation to the events of their periods betrays their links to the oil market. In all three periods, the performance of the asset market began its deceleration prior to the US macroeconomy, but was in line with the major events of the oil market. In the case of 1991, the drop in the asset market performance occurred prior to the US macroeconomic recession, but was in line with the invasion of the Kuwait crisis and the initial increase in the oil price level. The fact that the effects in the asset markets were sustained for longer than the duration of the shock itself is also evidence of the existence of strong correlation between the performance of asset markets and the US economy, which only recovered in the first months of 1991.

The timing of the events in the second period is very similar. Again, the financial downturn was in line with the main developments on the oil market, and they were both followed by a macroeconomic recession. In this case, the performance of the financial markets responded negatively to the peak of the oil shock and the burst of the dot-com bubble on the start of 2001. The macroeconomic recession started shortly after, while the effects of the 9/11 attacks and the subsequent military activities shaped the development of the crises, but not its cause. Therefore, the initial financial downturn was directly linked to the oil price shock and the burst of the bubble, which in turn led to the macroeconomic downturn. The military activities that followed placed further pressures on both, amplifying and deepening their already negative performance.

Finally, the timing of the events of the 2008 crisis, though largely similar, presents certain differences. On one level, the sequence of events follows the same pattern, whereby the financial downturn took place in line with the major events of the oil market, in terms of the surge in the military activities in Iraq and the very high oil price level, while preceding the macroeconomic recession. Nevertheless, two characteristics in this sequence are worth noting. First, the major financial development of the period, the burst of the housing market, occurred months before the downturn started. Second,

the financial downturn did not start in line with the peak of the oil price spike, but in line with the surge in the military activities in Iraq, which actually accelerated the already increasing pace of the oil price level and then helped to maintained it for more than a year.

As a result, the pattern of the events of 2008 was predominantly influenced by the oil market performance. The oil price level had been rising since 2003, at the start of the military activities in the Middle East, and spare capacity had fallen under 2.5 million barrels a day for the first time in this decade as a consequence of the two active military expeditions in the Middle East and an actual reduction of the international oil supply level. This formed, and confirmed the expectations of increasing oil prices and led to an oil shock. It is important to point out that the 2008 oil shock had its origins in 2003, in line with the invasion of Iraq, which indicates that the markets recognised, and formed their expectations, around this incident as a harbinger of future price hikes.

These initial price rises did not, however, affect the performance of the financial markets that remained positive up to the deflation of the housing bubble in 2007. Nevertheless, even though the housing market performance was decelerating, the overall performance of the asset markets did not drop until months later. Rather, this drop coincided with the surge of military activities in Iraq and the negative, and in some bankruptcy, pressures that the major international financial institutions were experiencing as a result of the deceleration of the housing market. The macroeconomic recession kicked in months after the financial downturn, and while the oil price level was still on its inflationary path. The combination of the two military operations in the region, along with the inflating pressures of the financial side of the oil market, led to the highest oil price levels in history. As in the previous two periods, the US military involvement, with its pressures on both oil prices and the US economy as well as its influence on the economic and oil-price expectations of the financial actors, led to a macroeconomic recession and a financial crisis.

The military development of all the three periods under analysis occurred prior, or in line with, their respective oil shocks, leading to macroeconomic and financial crises in

the US. The causality of these events is based on the oil price level, actors' expectations, and the US macroeconomic and financial performance. Finally, with the increasing spread of the financialisation process in the oil market structure and the emergence of a new body of actors operating under financial motives, the role of military activities becomes increasingly important in shaping the expectations of these actors. This is because turbulence in the Middle East is a fundamental indicator of an oil price rise due to the high risks of disturbance to the international oil supply level. The role of expectations, and the influence of military activities on them, was evidenced in the data of the futures positions described the previous chapters, in that the volumes of capital invested in the oil futures market consistently inflated whenever the US got militarily involved in the Middle East. The data also identified an exponential increase in the volume of financial investment injected in the oil market throughout these three periods. This is indicative both of the spread of the financialisation process, and of the growing influence that the determinants of financial behaviour came to exercise in the price-setting mechanism of the oil market as the shocks spread and intensified.

10.3 Oil Shocks, Technology, and Regulation (1989–2010)

The performance of the oil market during these three phases of financialisation varies in a number of respects. The most obvious difference lies in the nature of the oil shocks, especially in view of the fact that the 1991 oil price hike does not qualify as a large oil shock, but as an oil spike. Albeit as an oil spike, the 1991 shock deserves inclusion in this research for three reasons: it provides with a wider sample of data; it sets a baseline to the study, by offering an outlook on the configuration of an oil shock prior to the onset of the financialisation process; and it exhibit effects just as extensive and sustained as those of larger oil shock. With respect to the criteria presented in Table 6, therefore, there are three oil shocks, in the post 1980s period, that meet the purposes of this thesis.

As established in Chapter 4, the oil market is a supply-driven market due to its inelasticity of demand. This inelasticity is visible in the context of all the three oil price

shocks under study; they all coincided with various degrees of shortage in the international oil supply. In the 1991 period, the oil spike was caused by turbulence in the Middle East, which created a significant shortage in the oil supply (Miller, 1998). Similarly, in 2001 military turbulence in the Middle East combined with the re-empowerment of OPEC under the leadership of Chávez reduce the oil supply levels and contribute to the oil price shock (Bamberger, 2000; Rodríguez, 2002: 204). In the 2008 period, the same pattern recurs, following the turbulence of a re-kindled war in the Middle East, which restricted oil output and spare-capacity levels (Hamilton, 2008).

The effects that supply shortage had on the oil shock in all three cases were also subject to general expectations. As analysed in previous chapters, the expectation of a supply shortage, or 'peak oil', leads to increased demand for oil and, hence, higher prices. Similarly, the effects of the aforementioned military activities during these periods were not restricted to the creation of supply shortages, but also to the formation of expectations of such a restriction and, ultimately, of an oil shock. What is more, military activities in the Middle East also influenced the announcement – and market interpretation – of spare-capacity levels. The influence of these military activities on oil shocks is therefore dual: direct, by influencing supply levels, and indirect, by shaping expectations, which become increasingly more relevant after the onset of the financialisation process.

The three oil shocks can also be compared with respect to their timing relative to the financial, macroeconomic, and political events of their periods. Still based on the case of the US, the 1991 oil shock, which preceded the financial crisis of the time but coincided with the macroeconomic recession, contrasts with both the 2001 and the 2008 shocks, which significantly preceded not only the financial market crash but also the macroeconomic recession of their time. As analysed in Chapter 6, this mismatch was due to the fact that the process of financialisation had not yet been introduced in the oil market during the 1991 oil shock. For this reason, the oil shock was purely driven and contained by the underlying commodity market and its effects were felt most directly in the US macroeconomic performance, while the US financial market, still very much detached from the oil market, reacted with a significant time lag. That is not to say that

the macroeconomic recession was perfectly synchronous with the oil price rise; the recession started within a quarter of the initial rise in the oil price level, although still before its peak. However, the time lag is significantly shorter that the other two periods under study. This variation can be attributed to the rapidity by which this price shock initiated, peaked, and deflated.

In the other two cases under study, there is a significant lag between the initial oil price rise and the subsequent US macroeconomic and financial downturn. In the case of 2001, the oil price level started its inflationary path in 1999 and peaked around the end of the year 2000. In this case, both the US macroeconomic recession and the financial crash took place in line with the peak of the oil shock and a deceleration of their growth rate was already visible at the beginning of 2000. This translated in a one-year lag for the US macroeconomic and financial deceleration and a two-year lag for the actual recession after the initial rise of the 2001 oil shock. In the case of the 2008 period, this lag was even wider. While the roots of the 2008 oil shock can be traced back to 2003, when the oil price level reached its lowest levels before starting the upward rally that peaked in 2008, the US macroeconomic and financial performance kept booming until the end of 2007. This translates in a five-year lag between the start of the oil shock and the reaction of the US macroeconomic and financial performance. The timing of the events of this last period, however, reveal that once the US economy fell into a recession and the financial markets crashed, the oil shock does not immediately abates, as it did in the first two periods. Instead, the price level of oil rose by more than 50 percent relative to its value at the end of 2007.

The data provided in Chapter 6 suggests that this increasing time lag, which is a pattern observed throughout the three oil shocks under study, is a result of the emergence of the financialisation process in the oil market. In 1991, the effects of the oil shock, in the absence of financialisation, were contained in the underlying commodity market and passed on directly to the US macroeconomic performance. This, however, did not happen in the other two cases. The emergence of financialisation meant that any supply shortages caused by the aforementioned military activities, and the market expectations that they formed, boosted the inflow of capital into the market, as confirmed by the data

on the futures market positions. This boost, in turn, allowed the price level to decouple from the underlying commodity market. The decoupling of the financial dimension of the oil market from the underlying commodity market meant that the oil shock was not market-driven, as in 1991, but financially driven. Hence, these oil shocks consisted of an increase in the price of oil without a corresponding shortage in supply. Coupled with the nature of the oil-based financial markets, based as they are on price expectations, this development contributed to the formation of these lags.

Against this background, the three oil shocks under study can be argued to have similarities as well as differences that follow the transformative evolution of the oil market. This evolutionary pattern reflects the inception and progression of its process of financialisation. In the historical reconstruction of this thesis, this process unfolds throughout the period under analysis in three distinct phases.

The inception of financialisation, here referred to as the period of 'early financialisation', denotes the time when the financialisation process can be first observed in the oil market, notably with the launch of the first oil-based financial products in the late 1980s (Tang and Xiong, 2009; EIA, 2011). The study of the performance of the oil-based financial market in the first period of analysis further suggests that the key date for its development is arguably 1992. In 1992 a new type of investment is introduced in the form of non-commercial positions and the volume of positions in the market has since kept on growing. These positions are considered as investments performed by actors with speculation-driven motives (Labban, 2010).

Furthermore, while in 1991 the total volume of positions in the oil futures market was approximately 360,000, of which 10,000 were non-commercial positions; in 1992 these numbers rose to around 490,000 and 40,000 respectively. According to the findings discussed in previous chapters, the event that changed these figures so dramatically was the emergence of commodity-based indexes in 1992 (Silvennoinen, 2009; Clapp, 2010). These indexes allowed an easier and safer way into the commodity markets that did not require expert knowledge in the oil market. This allowed purely financially driven investments to enter the market. It follows that the 1991 oil shock and the financial and

macroeconomic crises, which naturally preceded the developments of 1992, were not affected by these initial instances of financialisation. However small, these developments laid the foundations of the processes that generated the following two crises and that turned the oil market into a financialised market.

The second period of analysis identified in this thesis covers the most important developments that determined the rise and spread of the financialisation process in the oil market. In this sense, this thesis identifies this period as the phase of 'low financialisation' of the oil market. Introduced at the beginning of the previous decade, oil-based financial products and commodity-based indexes had already gained a solid footing in the international financial markets. However, their popularity was dented substantially by regulations that prohibited a number of large financial institutions from entering the market. More specifically, the 'prudent investor' rule prohibited pension funds, banks, and hedge funds from investing funds in highly risky investments such as commodities markets.

This however changed radically with the turn of the new millennium. The 2000 CFMA regulation and the dissolution of the 'prudent investor' rule meant that the large financial institutions could now enter the oil-based financial market without restrictions by engaging in OTC trades (Brown-Hruska, 2004; Clapp, 2010; Labban, 2010). What is more, in 1999, the development of new technologies in the market, namely the introduction of Internet-based trading, made the products of this market easily accessible to a wider variety of investors, across a wider geographical area and with minimal restrictions (Kurtzman, 1993; Guttman, 2002, Mackenzie et al., 2012). The above developments meant that in combination with the introduction of commodity-based indexes in 1992, the oil-based financial market was now easily accessible from all over the world, with minimal restrictions, very low risks, and low knowledge requirements.

The data for the 2001 period shows a marked increase in the volume of positions in the market. The total volume of contracts is approximately 750,000, of which approximately 100,000 were non-commercial positions. It is worth noting that this is

not the highest volume of positions in the market for this analytical period, as in 1999 the market peaked at 1,080,000 positions. The substantial increase in the volume of positions for the 2001 period, as evidenced by the data furnished in the previous Part of the thesis, implies the transformation of the oil-based financial market into a financial investment market. Here, the oil market reaches the mature stage of its process of financialisation. The effects of this process are even better depicted by the ratio of traditional to speculative investments in the market, namely the commercial to non-commercial positions, which rose from approximately 11 to 1 in 1991 to approximately 5.5 to 1 in 2001.

In the period of 2008, characterised as the phase of 'advanced financialisation', the effects and spread of the financialisation process in the oil market become stronger. Towards the end of 2000s, commodity-linked exchange-traded funds (ETFs) were introduced in the market, with their risk hedged in the commodity futures market (Clapp, 2010). The high volume of sales in this new product market increased demand for commodities positions by issuing institutions that were, however, restricted by the CFMA restrictions on position volumes. In 2006, the CFTC issued *no action* letters that effectively lifted this regulation (Clapp, 2010).

One further development, caused by the actors themselves in a cyclical performative manner, altered the way that the financial dimension of the oil market operated. After 2001, and after the publications of a number of studies, which claimed that the oil market had a negative correlation to the performance of the asset markets, the international financial actors started approaching the oil based financial market as an efficient risk-hedging market. The view that the oil market was not affected by the developments in the financial markets, although it was recognised as one of the components used in the calculation of the inflation rate, meant that international financial and speculative investors could differentiate their portfolios and hedge against the risks of inflation and the volatility of the traditional asset market performance (Tang and Xiong, 2009). This view attracted an increasing number of investments in the market, which in turn attracted an even larger number of investments. The first waves of

investment increased price levels and, in doing so, shaped a self-fulfilling prophecy for the successive waves of investors attracted by the opportunity of increased returns.

More specifically, the data suggests a total number of positions in the 2008 period of 2,350,000; of these, 850,000 were non-commercial, that is to say a ratio of less than 2 to 1 between commercial and non-commercial positions. Considering that this ratio was 5.5 to 1 seven years earlier and 11 to 1 seventeen years earlier, the increasing importance of the non-commercial aspect of the oil-based financial market, and of the financial dimension of the oil market as a whole, is hard to dispute.

A number of conclusions can be drawn from this overview of the spread of the financialisation process throughout the three analytical periods identified in this thesis. First, the volume of positions in the oil-based financial markets increased very rapidly, quadrupling in size from 1992 to 2008. The second conclusion is that throughout this increase in the total volume of positions, the non-commercial positions experienced a significantly higher increase by more than 20 times, while the commercial positions increased by less than 3.5 times. The final conclusion is that this increase was facilitated by a number of key historical events that allowed for a greater variety of actors to enter the market.

CONCLUSIONS

The analysis conducted in this thesis set out to answer a number of questions, and ended its journey with as many conclusions. These conclusions describe the transformation that the oil market has undergone since the 1980s. Dismissive of the peak-oil arguments typically cited in explanation of this change, this thesis has suggested that the process of financialisation can be considered the main driver of this transformation on the basis that the evolution undergone by the market fits the paradigm of the process of financialisation. Even though the academic efforts to conceptualise the process of financialisation are quite recent, particularly with reference to the commodity markets, the developments that have taken place in the oil market, and that have altered its structure, motives, fundamental function, and processes, are unambiguously symptomatic of a process of financialisation. That these developments can be understood as direct effects of financialisation is further evidenced by their concomitance with the deregulation of the oil market and its opening to the financial sector.

More specifically, this thesis reached three conclusions. First, a new group of actors appeared in the triangular structure of the oil market during the 1980s. The introduction of oil-based financial products opened up the market and allowed the participation of financial investors, which thus became an integral part of the oil market structure. This new group of financial actors grew exponentially in numbers and in influence in the wake of two key events. The first was the development of commodity-based indexes in the early 1990s (Clapp, 2010); the second was the introduction of the CFMA regulation

(CFMA) and the consequent precipitous inflow of speculative capital in the market in the early 2000s (Brown-Hruska, 2004). At this point, there emerged a cleavage within the new group of market actors between traditional financial investors with hedging interests and their speculative, or price-manipulative, counterparts.

Second, over time, this new group of actors has grown, to include more and more players, in stark contrast to the underlying oil commodity market actors whose number has been relatively stable over the period under study. Evidence of this is the fact that the value of trades in the financial dimension of the oil market outstripped that of the physical commodity market (Masters, 2009a; OPEC 2012), even in estimates that exclude the value of OTC trades, which cannot be measured reliably (UN Trade and Development Report, 2009). This growth took place against the background of the deregulation of the market, the development of new technologies, the introduction of new financial products, and the use of the Internet in the marketisation of these products, which made the market easily accessible to a growing pool of international investors (Kurtzman, 1994; Guttman, 2002, Mackenzie et al., 2012).

Third, the period under study registered an increased *volatility* in the oil market spot price level, as a direct effect of the investment behavioural patterns of the financial actors (Clapp, 2010; Silverio, 2010). As the oil futures market performance was directly linked to that of the spot prices through the dynamics of the market structure, the development of a fourth group of financial actors in the market dynamics, interested in either rising or changing oil prices, led the oil spot price level to experience increasing volatility. In addition, there is a correlation between the newly introduced volatility in the oil market performance and the performance of the international asset markets (Pindyck and Rotemberg, 1990; Tang and Xiong, 2009).

The research conducted in the thesis focused on the political economy of the oil market, and more specifically, on the emergence of the financialisation process in its structure. These structural transformations, which have led to fundamental changes in the functions and pricing dynamics of a primary commodity market as important to the international economic system as that of oil, have ignited major international political-

economic developments. In order to study these developments, this thesis employed the more familiar concept of oil shocks because their effects are easily observable and can also be used to trace the effects of financialisation itself, with pre-financialisation shocks used as a baseline.

From within the analysis of the political-economic effects of the financialisation process in the oil market, this chapter also discusses two assumptions and one final conclusion. One of the clearest political-economic effects is macroeconomic performance. As a final conclusion, therefore, a close reading of the literature and the data on the evolution of the oil market in the context of the international economy, and of the US economy in particular, reveals strong links – and indeed an evolving relationship – between the oil market and macroeconomic performance (Mork, 1989; Hooker, 2002; Blanchard and Galí, 2007; Edelstein and Kilian, 2010; Herrera and Pesavento, 2009; Baumeister and Peersman, 2009a).

The examination of these links suggests the strongest of them are those the oil market has with productivity levels through input costs, real wage levels, inflation levels, unemployment levels, net investment levels, exchange rates, and, very importantly, budget balances (IEA, 2004). Identifying these links has been central for the argument of this thesis as tracing their performance can reveal the effects that the process of financialisation has had on this relationship. What is more, consequences of the financialisation process for the nature of the relationship between these two entities can be expected to have spill-over effects on the relationship between the oil market and the asset market through more indirect links.

The first argument posited by this thesis is that one of the main consequences that the emergence of the financialisation process in the oil market had on the international political economy is the increasingly expanding geographical and demographic scope of the effects of the performance of the oil market. This is of particular importance with respect to the fact that one of the most symptomatic effects of the financialisation process is the sudden addition of a large number of new international actors into the market, in the form of both financial institutions and individual actors. Therefore, the

expansion of the geographic and demographic scope of the effects of the performance of the oil market, as evidenced by the effects of the oil shocks, implies that this market is indeed undergoing a process of financialisation.

The second argument is that the deepening of the consequences of price changes on the macroeconomic performance is also a result of the financialisation process. This assumption posits that the increased number of international actors involved in the oil market structure, as mentioned above, has resulted in the wider geographical and demographic spread of the effects of price changes. In this assumption, it is not only the number of actors that has increased, but also the amount of invested capital. It follows that a change in the price level of the underlying commodity will cause different profits or losses in these portfolios, compared to what it would have caused if an increase in the number of actors had not occurred. As a result, a change in the price level of oil will not only have a wider geographical spread in its effects as a result of the financialisation process, but it will also have deeper consequences for the macroeconomic and financial performance, because of an increase in both the type and sheer number of actors, and the capital represented by them.

The above propositions and conclusions set the basic framework for evaluating the existence and effects of the financialisation process in the oil market structure, and the effects of the links between its performance and the macroeconomic and financial performance. This framework is developed on the basis of the notion of financialisation proposed by Epstein (2005), where the process of financialisation '*means the increasing role of financial motives, financial markets, financial actors and financial institutions in the operation of the domestic and international economies'*.

Having established a framework for approaching and assessing the existence and effects of the financialisation process, this thesis moved onto a historical review of the three major oil shocks of the post-1980s era in order to trace the financialisation process and its effects. Even though the three oil shocks under study, namely the ones in 1991, 2001, and 2008, differ in a number of respects (Blanchard and Gali, 2007; Segal, 2007), their close proximity to the macroeconomic crises and financial downturns that took place in

those periods, make them particularly useful illustrative cases for the study of the financialisation process in the oil market. The thesis approached these three shocks by framing them into a chronological triptych of low (1989–1999), early (1999–2003), and advanced (2002–2008) financialisation. Even though the 1991 oil shock was very short-lived, and the 2008 one was the deepest and longest oil price increase in history, these three shocks share a number of fundamental characteristics.

The analysis in Part 2 of this thesis examined each one of these oil shocks and the macroeconomic and financial crises that followed them. The analysis of each of the three shocks focused mainly on the drivers and background of the events around the oil shocks and their subsequent crises. Through this framework, this thesis proceeded to construct an understanding of their links and causalities.

The analysis of the 1991 oil shock and economic and financial turbulence shows that this period coincides with the origins of the emergence of the financialisation process in the oil market. This is because short, non-commercial, and otherwise risky investments started becoming increasingly popular among purely financially driven investors who were mostly positioned outside of the oil market structure until 1992 (Silvennoinen, 2009). This analysis suggests that even though oil-based financial products had already been available for a decade, financial actors did not start to enter the market before 1992. In 1992, the introduction of commodity-based indexes made the market appealing and approachable to purely financial, non–oil-related, investors who could not have previously entered the market as easily (Tang and Xiong, 2009). This, however, meant that the 1991 oil shock and the subsequent macroeconomic and financial crises did not have any financialisation-derived links as they both occurred prior to 1992. To be sure, this does not preclude the existence of traditional links between these three entities, especially since the oil market performance had an influential role in the US macroeconomic and financial performance of this period.

Even though the 1991 oil crisis can be regarded as a purely market-driven crisis, its effects were shortly passed on to the weak and unstable US economy. The analysis based this argument on a certain level of synchronicity and causality that can be

observed between the behaviour of these three entities during this period. It is then suggested that this causal relationship is based on the US dollar marketisation of oil, which, combined with the pre-existing large budget deficits, weakened the external aspect of the US economy (Clapp, 2009). At the same time, the ensuing deterioration of the main macroeconomic indicators, and the fear of a third large oil shock, affected consumer confidence levels (Roubini and Setser, 2004a: 11), which, coupled with unfavourable interest and inflation rates, led to a crash in the financial markets. The absence of high volumes of investments, especially speculative investments, indicates that these links were not influenced by the effects of the financialisation process of the oil market which only started months later; however, they do stress the influence that the oil market performance had on the US macroeconomic and financial performance even before the emergence of the financialisation process. Therefore, this period is defined in terms of low financialisation, as the roots of the process can be traced within its boundaries, even though the crisis itself was not shaped by it. As a result, the study of this crisis provides us with a benchmark of the effects of an oil shock in the absence of this process.

The examination of the second oil shock of the period focused on the events surrounding the turn of the millennium, and more specifically the 2001 oil shock, in terms of a period of low financialisation. Similarly to the 1991 shock, this shock was also preceded by a long booming economic period, and an attempt by the Federal Reserve to slow down the economy through successive interest rate increases in fear of corrosive inflation (Cooper, 1992: 156). At the same time, the election of Chávez, and his OPEC leadership aspirations, had inflated the oil price level (Bamberger, 2000; Rodríguez, 2002: 204), which would only increase further with the invasion of Afghanistan on October 2001. Thus, this macroeconomic policy, combined with a reduction in the US taxation levels, financed through the budget surplus and the oil market performance, led to an economic recession in the beginning of 2001. The effects of the macroeconomic performance were soon passed on to the financial performance, thus bursting the dot-com bubble, and the ‘new economy’ ideas along with it. The combination of these two crashes and the oil shock, led to a wide erosion of the US

macroeconomic performance, causing high unemployment, negative growth and increased inflation as well as a significant loss of confidence across the US.

The period surrounding the 2001 oil shock was of great importance for the future development of the financialisation of the oil market. Three specific developments altered the environment of the oil market, facilitating the process of financialisation in its structure. These three events were the end of the 'prudent investor' rule, the development of Internet-based trading, and the CFMA regulation (Brown-Hruska, 2004). These three developments allowed for large financial institutions to enter the oil-based financial market through the back door of the OTC market (Brown-Hruska, 2004; Domanski and Heath, 2007). At the same time, the introduction of Internet-based trading, combined with the development of the commodity-based indexes that had been launched in the previous period, allowed for a massive inflow of capital in the market from any international financial investor and with little to no financial or physical barriers (Clapp, 2010; Labban, 2010).

These three developments allowed for the full participation of a fourth actor in the triangular oil market structure. This becomes evident from the performance of the oil-based financial products prior to the peak of this shock in 2001, which is synchronised with the performance of the oil spot price. In contrast, a decoupling of this performance can be observed in the post-2000 period, which allows for the futures products to retain most of their value as the oil spot price plundered.

Even though the effects of financialisation can be best observed in the post-2000 period, its influence can be traced in the built-up to the 2001 crisis. The macroeconomic downturn of the US was a direct result of the dot-com crisis, which, along with the rising oil price level and the terrorist attacks, led to a crash of the US stock markets and the loss of confidence in the US and the 'new economy' paradigm (Arestis and Karakitsos, 2004: 22). The military activities that took place in the Middle East shortly after the above events, was an indicator that any investment in the oil market would become profitable, especially since the asset markets were underperforming and the oil-based financial products had proved to serve well as an alternative to the asset markets

and the inflation pressures (UN Trade and Development Report, 2009). In light of the 2000 regulatory developments, investments in the oil market became both appealing and accessible to a wider audience of investors. Consequently, while the asset markets were plunging and the macroeconomic performance was still in a recessionary period, the oil-based financial products dropped marginally and for a very short period of time after the peak of the 2001 shock, only to return promptly back to their inflationary trend.

During the 2008 oil shock however, the effects of the financialisation process in the oil market and its links to the US macroeconomic and financial performance had become a very real – and integral – part of the system. For this reason, this period is characterised as the phase of advanced financialisation. Very similarly to the previous two shocks, the US economy was very unstable in the months preceding the shock. However, the nature of this instability was of a different nature. The Federal Reserve, in its attempt to boost the economy after the events of 2000, had maintained very low interest rates and, in doing so, had boosted the level of liquidity of the economy and shaped the *subprime mortgage'* bubble (McCarthy and Peach, 2004; Caballero et al., 2008; Hardouvelis et al., 2009; Obstfeld and Rogoff, 2005; Portes, 2009; Akerlof and Shiller, 2009). At the same time, however, two very important underlying developments were shaping the events of the period. The first of these developments was the increase in US deficits. This increase had been caused by the loss of value of the US dollar, the unforeseen fiscal expenditure of the military activities in the Middle East, and the ever-increasing price of oil. The second development was the exponential increase in the inflow of financial capital in oil-based financial markets.

The analysis of the 2008 shock, proposed a causality link between the events of this period. The low interest rates introduced in 2001 boosted the housing market and shaped a bubble; however, this increase of activity is evident in the oil market structure as well, with the only difference being that, in the latter, the increase was more gradual and only started increasing exponentially in 2007, when the housing markets started deflating. It is suggested that the turn of the financial capital from the housing market to the oil market, as a result of the deflation of the bubble in the housing market, was synchronised with the increase in activity in the oil market. The significance of this

claim is intensified by the fact that, while the housing bubble burst and the real estate prices kept falling for the following years, the oil market maintained its upward rally for more than a year before dropping back to its 2003 levels. This turn was permitted by the self-fulfilling prophecy set in motion by the market expectations of a steady rise in oil price levels, due to the military activities in the Middle East, supply shortages, and reduced spare-capacity levels.

It is important to point out that since 2007, when the price level of oil began rising, the effects of this hike had a direct impact on the macroeconomic performance of the US. The increased demand for oil-based products created additional inflationary pressures on the spot price level of oil, causing an exacerbation of the US budget deficits, because they now had to purchase oil for a higher price and with a weaker currency. This shaped pressures in both the external and the internal aspect of the US macroeconomic performance. The levels of output and inflation deteriorated as the cost of energy rose, which in turn increased unemployment and placed contractionary pressures on the economy starting from end of 2007.

These pressures were also intensified by the effects of the crashing housing market, which was reducing the liquidity of the economy (Caballero et al., 2008; Obstfeld and Rogoff, 2009; Portes, 2009), but also led to a profound loss of confidence amongst the US public. The performance of the asset market followed the performance of the macroeconomy very closely. As the housing market bubble started failing, a number of large financial institutions faced liquidity problems, which in some cases led to near, or actual, bankruptcies. The effects of these events, combined with the deteriorating macroeconomic performance and the already negative confidence levels, led to a crash of the asset markets and a flight of capital. In 2008, an official macroeconomic recession was announced just as the oil price was reaching its historical peak.

The analysis of the events of this crisis, therefore, brings to light the effects of the process of financialisation when taking into consideration the importance of the nature and accessibility of the oil market in the development of this crisis. On the first level, the nature of oil as a primary commodity with inelastic international demand meant that

the changes in its price levels were fully experienced by the US, as an importing economy; insofar as they could not adjust their demand level is a timely manner.

On the other hand, the introduction of uncomplicated commodity-based index products in the 1990s, the deregulation of the oil-based financial products in 2000, and their easy accessibility through the development of new technologies shaped a market that attracted an oversized and progressively increasing amount of financial capital after 2001. However, due to its nature, the growth of this market created negative pressures on the performance of both the US economy and its financial markets. This is evidenced by the newly established relationship of the oil price level and the asset market performance after 2000, as indicated by the graphs above.

Part 3 of this thesis tested the analysis of the above findings against two different approaches. The first part of this discussion focused on the findings of a comparative breakdown of historical political-economic indicators (see Table 6 above). The chapter, then, traced the evolution of the financialisation of the oil market through a linear comparison of the developments of key sectors during the periods under study. This part observed the similarities, differences, and evolutionary patterns that could be extrapolated from the events of these three turbulent periods. The second part of this chapter incorporated all the of above findings and conclusions and placed them on the two-pillar theoretical framework formulated in Part 1 of this thesis. This analysis confirmed that the theory fit with the evolutionary patters and historical developments observed, thus validating the conclusions of the thesis.

In an attempt to offer a fresh approach to the political economy of the oil market, this thesis has sought to explain its evolutionary dynamics by reference to the impact of the process of financialisation on the structure and behaviour of both the oil market and the US macroeconomic and financial performance during the three most recent oil shocks. The purpose of this thesis was not to provide a new theoretical approach on either crises or financialisation. It was, rather, an attempt to map the manifestation of this process in the field of the oil market, which has long been overlooked in the literature of financialisation.

In doing so, its main aim is to stress the increasingly important role that the oil market has had on the contemporary political and economic history, particularly its role in the formation and development of the 2008 credit crisis as well as its potential for shaping further political-economic turbulence in the future. Given the nature of oil as a naturally exhaustible resource, and a primary energy source, the process of financialisation and decoupling from its physical production makes the potential for further far-reaching oil shocks very high. In this sense, it is all the more important to understand the evolutionary pattern of the oil market and its links to the international macroeconomic and financial performance in order to prepare for this eventuality.

The research for this thesis, however, encountered two primary limitations. First, the data on the effects of financialisation on the oil market is not comprehensive, as the CFTC data on commodities trading covers only trades registered in official exchanges. This implies that an unknown volume of trades goes unrecorded. As such, the validity of the findings in this thesis is contingent upon the publication of more inclusive data by the CFTC.

The second limitation of this thesis is that, while the financialisation process, as conceptualised by the theoretical model here formulated, adequately describes the historical evolution of the oil market and of the US macroeconomic and financial performance, it is not possible to determine the exact extent to which these effects were caused by the process in question. Other parallel processes or events, either known or unknown, could also have shaped these effects, which are, therefore, sufficiently, but not necessarily, explained by the model of the financialisation process. In other words, these events cannot be irrefutably, nor exclusively, characterised as the result of the emergence of the financialisation process in the oil market structure. Nevertheless, this limitation does not diminish the validity of the above findings and conclusions. This is because the argument of this thesis proceeds from the narrower, but no less instructive, hypothesis that the effects of the financialisation of the oil market have been significant enough to shape the international macroeconomic and financial performance. This hypothesis is found to be consistent with the argument and findings of this thesis.

Further Research

Although this thesis focused on the evolution of the oil market and its links to the US macroeconomic and financial performance, much space is left for further research on the effects that this process has had on the international macroeconomic and financial level. The links suggested in the previous chapters have proved solid, especially with reference to the spread of the financialisation process in the oil market since the year 2000. Nevertheless, the international aspect of these effects has been intentionally omitted from this thesis. Studying closely the links and effects of this process on the performance of all or a number of international economies in depth would require extensive and specialised research.

The approach developed in this thesis has suggested that there is, in fact, a strong international aspect to the effects of the financialisation process of the oil market; therefore, an exclusive focus on the US economy effectively neglects the international effects that the emergence of said process has had throughout the period under study. This international aspect has shaped the gradual intensification and geographical expansion of the effects that the price level of oil has had on the international macroeconomic and financial market shocks. In order to investigate the validity of this statement and the need for further research on the internationalisation of these effects, a selection of data from the OECD economies is provided below.

This sample is deliberately limited compared to the total number of international economies and lacks the perspective of developing economies. This makes it possible to have easy access to comparatively accurate data for more than thirty of the most economically and financially developed international economies. Additionally, this sample of developed economies have the highest exposure to both the underlying commodity and the financial dimension of the oil market and can therefore reflect the effects of any effects that the financialisation of the oil market might have on both the performance levels of both these aspects of their economies. A study that includes developing countries, on the other hand, would require factoring in the disequilibrium

between highly oil-dependant production levels and the modest financial performance due to the lack of high financial exposures.

In the previous chapters, it was established that the oil price level has direct links on the US macroeconomic performance by negatively affecting a number of its central fundamental indicators, such as GDP levels and inflation rates, among many others (Hubbard, 1986; Mork, 1989; Hooker, 2002; Mabro, 2005; Blanchard and Galí, 2008; Rotemberg, 2007; Kilian, 2008b; Baumeister and Peersman, 2009a; Edelstein and Kilian, 2009; Herrera and Pesavento, 2009). In view of further research into the effects that the three oil price shocks have had on the international economies as well as into the international reach and extent of these effects, below are data charts (Figures 83–87) that illustrate the GDP, inflation rate, personal consumption levels, and unemployment rates of the OECD economies for the periods under study.

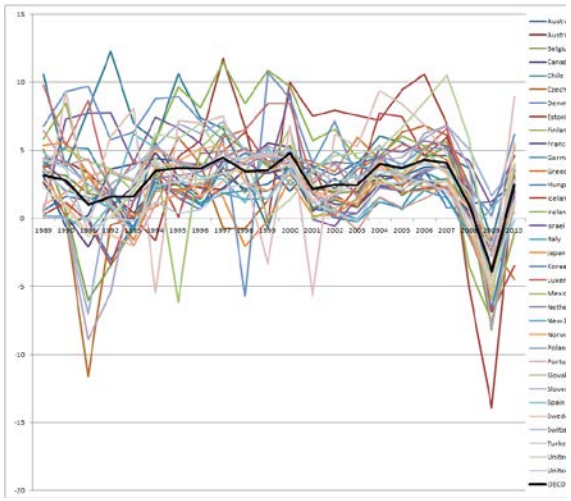


Figure 83-10 OECD countries Gross Domestic Product % growth (OECD, 2011)

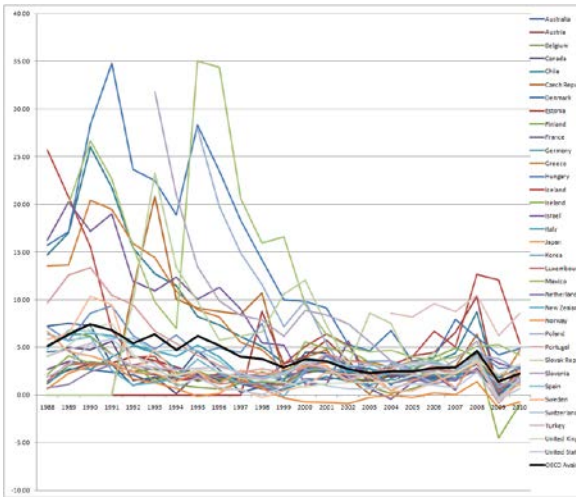


Figure 84-10 OECD CPI Inflation (OECD, 2011)

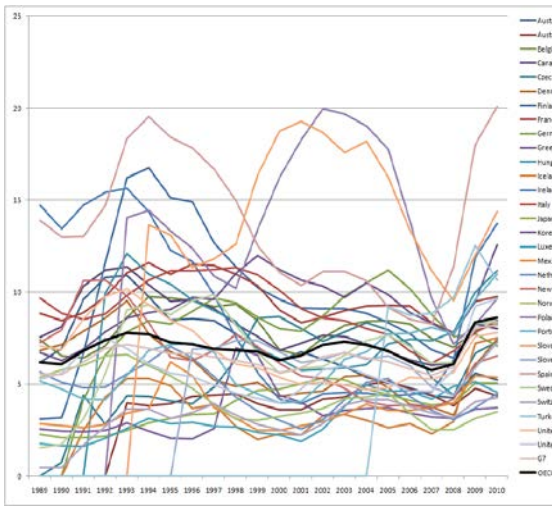


Figure 85-10 OECD Unemployment Rate (OECD, 2011)

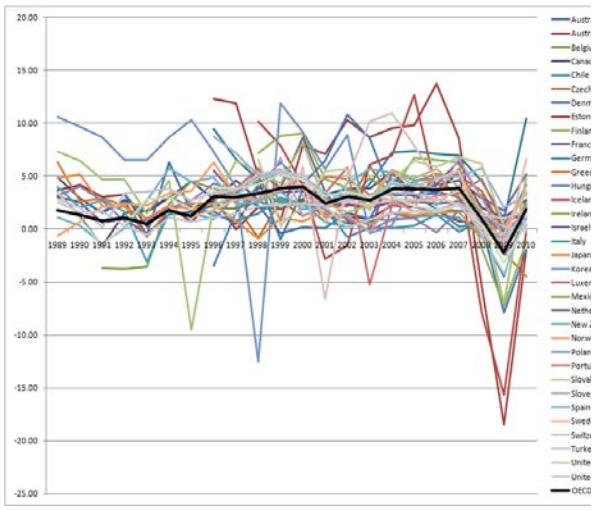


Figure 86-10 OECD Personal Consumption % Change Over Previous Year (OECD, 2011)

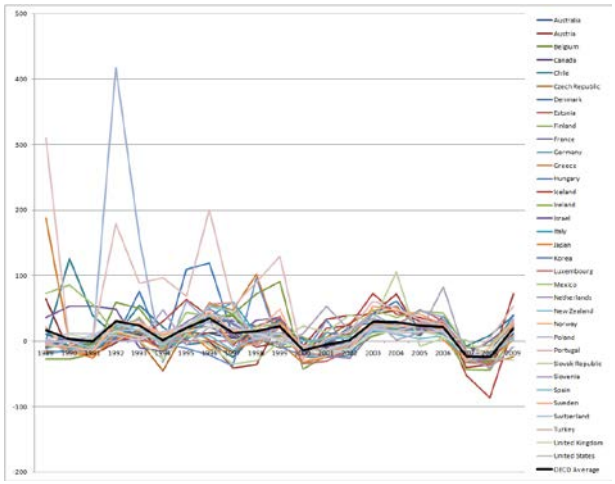


Figure 87-10 OECD Stock Market Performance % Change Over Previous Year (OECD, 2011)

Figure 83 illustrates the GDP level of the OECD countries from 1988 to 2010. Sketching an OECD average line on the figure (black) reveals the ever larger, and synchronised, reaction of the GDP levels of the OECD economies to the events of the three periods under study. Similarly, Figure 84 plots the OECD countries CPI inflation rate for the same period. The illustration confirms that the inflation rates of the OECD economies gradually fall in line with their average value, which is affected by the events of the periods under study. It also illustrates that there is extensive variance in the

inflation rates of the OECD countries during the 1991 period, with a number of outliers experiencing different effects from the core of the OECD trends depicted by the OECD average line; however, this variance diminishes with time: the post-2000 period reaches high levels of synchronisation and 2008 sees a synchronised increase in the magnitude of the inflationary response to the events of crisis. Figure 85 presents the OECD data on unemployment, which shows both a lag and a gradually increasing level of sustainability in their reactions. In the post-2000 period, the OECD unemployment rates synchronise and start to converge towards the OECD average value.

Figure 86 illustrates the personal consumption levels for the OECD and some of the largest non-OECD economies for the periods under study. The levels of personal consumption illustrate the actual economic pressures, such as inflation, weakening currency values, unemployment, as experienced by the public. The performance of this indicator is directly in line with the behavioural aspect discussed in this thesis. A similar pattern to that of the GDP levels can be observed. Even though data for many OECD countries is not available, a significant worsening in personal consumption levels of the OECD is recorded in most of the countries where data is available. A much more extensive worsening is, however, observed in the 2001 period, where most of the OECD economies turned from the very high personal consumption levels of 2000 to the reduced levels of 2001. According to the data in Figure 86, most of the OECD countries' personal consumption levels fell in line with the core OECD performance, with few outliers during each period. However, a convergence towards the core can be observed in the post-2000 period. Additionally, a deepening effect can also be observed in the increasing magnitude of the drop of the average OECD personal consumption during these three periods as well as in the increasing sustainability of these effects.

Figure 87 plots the stock market performance of the OECD economies throughout the three periods under study. It is clear that similar patterns to that of the macroeconomic level can be observed for the financial level as well. The chart also shows the gradual convergence and synchronicity of the stock market performance trends towards the core average OECD performance, which implies that the international stock markets are increasingly affected by the same events. Furthermore, a growth in the effects that these

periods had on the average OECD stock market performance is also visible, along with the increase in the speed at which these effects took place.

The graphical representations of the figures above show both increasing synchronicity and established patterns among OECD members at both the macroeconomic and financial level, especially since 2000. According to the theoretical assumptions reached in the previous chapters, the financialisation process leads to the internationalisation and intensification of the effects of the performance of a market. The above data suggests that the patterns observed in the OECD countries from 1989 to 2009 falls in line with the theoretical conclusions drawn in previous chapters, proving that further research into the internationalisation and intensification effects of the financialisation process is indeed the next step of this research.

Questions can be raised, however, over the weight of this argument compared to a number of parallel processes that existed at the same time with similar results. For example, the processes of globalisation, marketisation, liberalisation, and even westernisation have been argued to have been active during the same period considered in this thesis; the internationalisation and intensification patterns discussed above could, therefore, result from one of these processes. Can we be sure that the effects observed above can be attributed to the financialisation of the oil market, or could it be the result of the workings of one of the above processes, or a combination of them or even the financialisation of some other market?

Since these known processes, and possibly other unknown ones, have been active during the period under analysis, it is difficult to draw the definitive conclusion that these patterns were solely the result of the emergence of the financialisation process in the oil market. On the other hand, even though these processes were active during this period, they do not preclude the possibility that all or part of these patterns can be attributed to the development of the financialisation process in the oil market. Three arguments can be made in support of this statement.

First, the timing of these patterns is very closely correlated to the events that have shaped the emergence and spread of the financialisation process in the oil market. This has been characterised by four key dates: the development of the first oil futures, in 1981; the introduction of commodity-based indexes, in 1992; the development of new technologies in the operation of the market, in 1999; and, finally, the deregulation of the market, in 2000. At this point, the financialisation process started to spread at an exponential rate within the oil market structure. In its wake, this process created stronger links with the US macroeconomic and financial performance, introduced a new, fourth actor in the oil market structure, and established itself as a very efficient hedge against the inflation rate. The data and figures presented in this chapter show an internationalisation pattern in both the macroeconomic and the financial performances of the OECD countries since 1989, an intensifying pattern in both the OECD stock-market reactions since 1989 and in the OECD macroeconomic reactions in the post-2000 period. In both cases, the effects became stronger in the post-2000 period, in line with the deregulation of the oil market and the start of the massive inflow into the oil based financial markets; similarly, in 2008, when the financialisation of the oil market reached its highest peak, the above patterns also exhibited their highest strength.

Second, the central role that the oil market performance had in the events of each of the three periods under study cannot be overlooked. The period from 1989 to 2009, which is also covered in the figures given above, includes three international macroeconomic and financial crises. Each and every one of them had been heavily shaped and influenced by the three oil shocks that preceded them. Even though other markets had been involved in the shaping of these crises, such as the dot-com and the housing market, the oil market has been a constant, central determinant in all three crises. This cannot be overlooked.

Third, following from the above argument, the oil market, unlike other markets, has been central in all of three crises. Since the patterns observed fall in line with the timing of the emergence of the financialisation process in the oil market, this process can be seen as underpinning the international macroeconomic and financial performance during these three crises. Even though other processes were active during the same

periods under study, none shares the same characteristics that highlight the importance of studying the influence of the oil market. Globalisation has been active for several decades, but its nature has not changed radically in the last two decades. Marketisation and westernisation have experienced waves in spread and popularity; however, there is not enough correlation of the timing between their developments and the events of the three periods under study or the performance of the patterns of OECD countries to establish a credible relationship of causality. Alternatively, the financialisation process of other commodity markets with a similar timeline could be considered; however, none were as central to the development of these crises as the oil market.

Therefore, even though the patterns observed in the economic performance of the OECD countries over the past two decades cannot be fully attributed to the effects of the emergence of the financialisation process in the oil market, it can safely be argued that this process is the only one to offer a concrete timeline that is synchronised with the patterns observed; is the only one that has been central in the developments of each of the three crises of the period under analysis; and is, finally, the only one to provide an underlying dynamic that had both the potential and the timing to be responsible for a significant percentage of the patterns observed in the data presented above.

This conclusion raises a second question: to what extent can these patters be attributed to the emergence of the financialisation process in the oil market structure, and to what extent is it important for it to account for the largest part of these effects? To answer the first part of the question, the extent to which these patterns have been shaped as a result of the financialisation of the oil market quite simply cannot be measured. However, since the evidence for the alignment and causality between this process and its apparent effects is strong, and in the absence of an alternative process that can account for these effects as comprehensively and compellingly, the extent to which these patterns can be attributed to the financialisation process of the oil market can only be assumed to be significant. To answer the second part of the question, as long as there is a significant causal link between the emergence and spread of the financialisation process in the oil market and the patterns in the OECD macroeconomic and financial performance, the exact percentage is of secondary importance. The fact that the financialisation process

has cemented the influence and effects of the oil market on the international macroeconomic and financial performance is, itself, a confirmation of the conclusions of this thesis and, therefore, of the increasingly central role of the oil market at the international level.

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